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ABSTRACT

This document presents the results of a project to develop new designs for career and technical education (CTE) at the secondary and postsecondary levels in the context of the process and recommendations used in two previous projects that identified new designs for comprehensive high schools and two-year postsecondary institutions. The document is a compendium of 103 design reviews of research, policies, and exemplary practices that focus on whole high school and community/technical college reform and incorporate the results of research and promising practice, including integration of academic education and CTE, articulation of secondary and postsecondary education, and coordination of school and work-based learning. The compendium begins with overviews of the project's purpose, process, and projects. After a detailed discussion of the process of the design reviews' development, 103 design reviews are presented. The design reviews are organized according to the following areas of focus: learning context; learning audience; learning signature; learning expectations; learning process; learning organization; learning partnerships; learning staffing; learning environment; learning accountability; learning celebration; and learning finance. Twelve tables are included. Lists of authors contributing to the design reviews, national design group members, national design studio workshop participants, and site visit locations and agency presentations are appended. The bibliography lists 616 references. (MN)

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# New Designs for Career and Technical Education at the Secondary and Postsecondary Levels: Compendium of Design Reviews of Related Research, Policies, and Exemplary Practices

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**February, 2003**

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## Abstract

The purpose of this project was to develop new designs for career and technical education at the secondary and postsecondary levels in the context of the process and recommendations used in the projects, *New Designs for the Comprehensive High School* (Copa and Pease, 1992; Copa, 1999) and *New Designs for the Two-Year Institution of Higher Education* (Copa and Ammentorp, 1998). Both were products of the National Center for Research in Vocational Education at the University of California, Berkeley. These projects focused on whole high school and community/technical college reform and incorporated the results of research and promising practice, including integration of academic and career and technical education, articulation of secondary and postsecondary education, and coordination of school and work-based learning. With this foundation of former work in place, the aim of the new project was to draw out specific implications for the design of career and technical education in terms of learning expectations, learning process, organization, staffing, partnerships, and learning environment. Both practitioners and researchers were actively involved in the design process. For the purposes of this project, "new" designs means a coherent synthesis of the latest research, relevant policies, exemplary practices, and leading thinking on career and technical education at the secondary and postsecondary levels in the United States. The project produced two products: (1) a *Design Guide for Practice and Policy*, and (2) a *Compendium of Design Reviews of Related Research, Policies, and Exemplary Practices*. This report represents the second product.

## Preface

The *New Designs for Career and Technical Education at the Secondary and Postsecondary Levels* project aims to capture and communicate the collective voice of leadership in career and technical education at the secondary and postsecondary levels in the United States regarding future direction for the field. The research project was conducted under the auspices of the National Research Center for Career and Technical Education, University of Minnesota with funding through the Office of Vocational and Adult Education, U. S. Department of Education, Washington, DC. Dr. George H. Copa, Professor in the School of Education, Oregon State University was the Project Director and Dr. Susan J. Wolff was the Project Coordinator. The project was funded for Years 2000, 2001, and the first half of 2002, and involved leaders in the practice of career and technical education at the secondary and postsecondary levels of education form across the United States.

The research project addressed the mission, values, vision, goals, and performance indicators for career and technical education as well as 12 aspects of its operation, including audience, expectations, learning process and organization, partnerships, staffing, facilities, accountability, and finance. The resulting recommendations are based on a review of related research, policies, and exemplary practices and extensive discussion and review by leaders in the practice of career and technical education at the secondary and postsecondary levels of education. The two products of the project are a *Compendium of Design Review of Related Research, Policies, and Exemplary Practices* and a *Design Guide for Practice and Policy.*

A 13-member National Design Group, with the purpose of advising the Project Director and Coordinator, was appointed from among state leaders in Career and Technical Education (CTE), CTE counselors, teachers, and administrators, CTE teacher educators and researchers, and business and industry. The members are listed in Appendix I. To seek further professional peer review of the work done by the Project Staff and the National Design Group, four National Design Studios were held, two in the fall of 2000 and two in the fall of 2001. These additional 100 leaders in CTE reviewed and extended the design recommendations emanating from the project. Participants in the National Design Studios workshops are listed in Appendix II. Additional steps to the research included visits to exemplary sites— secondary, postsecondary, or combined, at each of the locations where the National Design Group met or the National Design Studios were held—and presentations from agencies. The sites visited and agency presentations are listed in Appendix III.

## Acknowledgments

We gratefully acknowledge many individuals who have contributed to the preparation of the contents of this report. Contributing authors include current and former graduate students from the School of Education at Oregon State University, other educational leaders, and project staff. A list of contributing authors is shown in Appendix I. Members of the National Design Group and participants in the Design Studios workshops provided topic and format suggestions and initial review of many of the design reviews. Special thanks go to Dr. Katherine Zmetana, who provided editing services, and to the project staff who worked diligently to bring the report into being; these include Chester Bateman, Kayte Enea, Julie Martin, and Melanie McCabe.

Additionally, we recognize the support and contributions to the project by Dr. Charles R. Hopkins, Director of the National Research Center for Career and Technical Education; Dr. James R. Stone, III, Associate Director of the National Research Center for Career and Technical Education; Dr. Ricardo Hernandez, Chief, Program Improvement Branch of the Office of Vocational and Adult Education, U. S. Department of Education; Laura Messenger, Project Liaison, Office of Vocational and Adult Education, U. S. Department of Education; and Dr. Wayne Haverson, Site Director, National Research Center for Career and Technical Education, Oregon State University.

## Introduction

This section of the report provides background information on the overall purpose of the project New Designs for Career and Technical Education at the Secondary and Postsecondary Levels, the design process used to produce the design recommendations, and the design elements that form the dimensions of CTE addressed by the project to organize the recommendations.

### *Project Purpose*

The primary purpose of this project was to develop a vision of the desired features of career and technical education programs at both the secondary and postsecondary levels in the United States. The recommended features were developed to guide the annual $13 billion expenditure by local, state, and federal government sources on CTE programs in terms of policy, professional practice, research, dissemination, staff development, and accountability. A second purpose was to develop a design/redesign process for use by schools and colleges to advance their CTE programs in the directions defined by the recommendations. The recommended design features were based on a review of present policy, research, promising practices, leading thinking, and educational reform initiatives; the guidance and dialogue of a National Design Group; and review by CTE leaders through a series of National Design Studio workshops held in 2000 and 2001.

The new designs recommendations are to be responsive to and provide leadership for whole school/college educational reform efforts in the country. The project builds on the work of the previous National Center for Research in Vocational Education relating to *New Designs for the Comprehensive High School* (Copa and Pease, 1992; Copa, 1999) and *New Designs for the Two-Year Institution of Higher Education* (Copa and Ammentorp, 1998).

The recommendations address the following elements of career and technical education: Context, Audience, Expectations, Learning Process, Organization, Staffing, Partnerships, Environment, Accountability, Celebration, and Finance. Throughout the development process, focus has been on identifying features of CTE that would enhance its impact on learners and our society as a whole. While several of these features have already been identified in several other sources, many have not, and they have never been assembled in one comprehensive, coherent report with considerable external professional review. Validation of project recommendations was achieved in two primary ways: (1) grounding in available research literature, and (2) peer review by recognized leading practitioners in career and technical education at the secondary and postsecondary levels from across the United States.

***Activities accomplished.*** The project has accomplished the following major activities:

- Completed six meetings of the National Design Group (see Appendix II for list of members).
- Completed nearly 150 design reviews of research, policy, and exemplary practices relating to elements addressed (these reviews are presented in this report).

- Completed design recommendations addressing all elements and a statement of national mission, vision, values, goals, and performance indicators for CTE at secondary and postsecondary levels.
- Completed four National Design Studios involving 100 leading practitioners in CTE at the secondary and postsecondary levels to review and extend the design recommendations (see Appendix III for listing of participants).
- Visited several exemplary CTE sites and participated in presentations by several resource persons relating to exemplary practices in CTE (see Appendix IV for listing of sites and resource persons).
- Completed initial development of an Internet-based New Designs learning community to increase opportunity for input, review, and dissemination of design recommendations.

***What is new about new designs?*** This project makes new contributions to the directions CTE should take in the United States in several ways: (a) the design features are the result of simultaneous consideration of both secondary and postsecondary levels of career and technical education (not separate reports for each level), (b) the design features form a coherent, systems perspective of CTE that is comprehensive, internally consistent, and aligned (not isolated attempts), (c) the design features result from a current review of research, policies, and exemplary practices, and leading thinking (not dated), (d) the design features emanate from extensive dialogue among those involved and concerned about career and technical education (not untested by the views of practitioners), and (e) the design features respond to the context that career and technical education in the United States is a diverse and loosely connected enterprise—they are set forth as guidelines or aims (not as "one model fits all"). The design recommendations include a design process for application to local situations in high schools and community and technical colleges across the country. Such a process makes use of the recommended design features as a desired state of affairs to consider, but focuses on the stakeholders involved at a particular setting and a belief in their willingness and desire to improve career and technical education and the services it provides to youth and adults, organizations, and communities.

### *Design Process*

The design process used in developing the recommendations presented later in this report and advocated for use in designing CTE in high schools and community and technical colleges was developed over many years and applications of New Designs for Learning (Copa, 2002). The process strives to provide a framework and strategy for an institution to reach for and grasp its vision for the learning experience. The process has two central dimensions: Design Values and Design Elements.

***Design values.*** Values that guide the design process serve as foundational principles or presuppositions to the way one goes about the process. The key values are as follows:

- **Involving and trusting stakeholders**–Closely involve those who have a stake in the educational institution and trust that they will act wisely.
- **Designing down and checking up**–Ask most important questions first and align responses to later questions accordingly; check back among questions and answers to see that there is coherence and consistency.
- **Addressing comprehensively**–Consider all elements of the institution rather than focusing on only one area as many of the desired features are interrelated, one element to another.
- **Building on assets**–Every institution has some areas of strength within its borders and among its partners and external stakeholders: use these to advantage in the design process.
- **Looking outside**–Sometimes it is necessary to literally go outside (the institution) to get back into educational excellence; those involved in the planning from outside should at least equal in number those from inside the institution.
- **Provoking and respecting**–The role of the process facilitator is to raise questions and bring ideas and examples that provoke thinking and discussion and then respect those involved to make good decisions.
- **Thinking long term**–Real institutional change takes a long time and involves many ingredients beyond new plans or designs, including leadership, staff development, and resources.

***Design elements.*** The design process consists of 12 elements, executed in a particular order, and referred to as "designing down" and "checking up." The elements of the design process are as follows:

- **Learning Context**–Attention to the *learning context* specifically recognizes and reinforces the need to tailor the design of the educational insitution to its unique situation. During this element of the design process, the focus is on the unique assets, challenges, opportunities, and aspirations of the institution under consideration. In general, *assets* are features about the institution that are working and which should be retained in the new design; *challenges* are features that are not working and which need to be fixed; *opportunities* are features that cannot be taken advantage of with the way the institution is currently operating; and *aspirations* are the future hopes and dreams for the institution.
- **Learning Audience**–The *learning audience* in the design process refers to those whom the educational institution is to serve and their needs. Typically educational institutions are thought of as only serving students, young and old. However, educational institutions may also serve other organizations and communites as well as being a place for their own staff to continue to learn. Being clear about the audience for the insitution can have a major impact on the institution's organization, staffing, partnerships, technology, and facilities.
- **Learning Signature**–The *learning signature* focuses on what is to be special and unique about the educational institution under design or redesign. While most

educational planning processes include consideration of mission, vision, values, and logo, these components are rarely linked together in a compelling and highly meaningful signature for the institution. The literature on effective schools and colleges concludes that giving the institution a special focus provides coherence, consistency, and spirit to the institution, and thereby adds to the quality of the learning experience and accomplishments. If the learning signature is real and meaningful, one should be able to ask anyone involved in the institution—teacher, student, parent, custodian, or secretary—what is special about the institution and get the same basic answer. Usually, design groups for an institution are asked to develop a symbol, picture, phrase, story, or object that communicates clearly what will be special about the institution they are designing. A shared signature for the institution is collectively developed from personal signatures through a process of sharing, reflection, compromise, and consensus-seeking.

- **Learning Expectations**–*Learning expectations* address what is promised in terms of learning results or outcomes from the institution being planned. The list of learning expectations represents the students' accomplishments as promised by the institution in exchange for the public's investment in teaching and learning.
- **Learning Process**–Typically, the *learning process* consists of design specifications for curriculum, instruction, and assessment. In implementing this design process, the emphasis moves from learning expectations directly to identification of learning products that would demonstrate that the learning expectations have been achieved. Additionally, the focus is on the identification and design of learning projects that would result in the desired learning products. These learning projects, which consist of learning events or activities, naturally and strategically link assessment, curriculum, and instruction. Assessment is continuous, curriculum is interdisciplinary, and instruction is "construction" with learners as active participants building their own personal knowledge. With this strategy, subject areas are necessarily and naturally integrated, learning inside the institution and in the community is valued and closely coordinated, and learning is viewed as a continuous process through early childhood, youth, and adulthood, requiring seamless transitions from pre-school through elementary, middle, high, and postsecondary schools.
- **Learning Organization**–Attention to the *learning organization* element results in decisions about how to organize the time schedule, learners, staff, learning process, decision-making, technology, and learning settings in order to best support the learning process described above. In developing desired features for learning organization, a design group is sub-divided into small groups of four or five individuals, and each sub-group is asked to develop the specifications for one aspect of organization (for example, time, students, or technology). The sub-groups focus on both areas of agreement as well as issues for further discussion and information gathering. The sub-groups then present to the whole design group and, through discussion, issues are resolved or given further study, and a coherent and mutually reinforcing set of organizational attributes is eventually selected.
- **Learning Partnerships**–The *learning partnerships* element of the design process focuses on those who need to be involved in making the learning organization and

learning process work to achieve the learning expectations. An important consideration of learning partnerships is identifying the many partners, both internal and external, that are needed. For example, the list of partners for a K-12 school may include: families, business and industry, government, churches, community-based organizations and agencies, higher education institutions, school staff, students, alumni, senior citizens, funding sources (i.e., foundations), parent teacher associations, neighboring schools, and a regional cooperative service agency. It is also important to attend to the desired characteristics of the partners and the various resources and services that might be shared. This sharing of resources is a two-way process that includes not only external partners providing resources and services to the institution, but also includes the institution providing resources and services to the external partners. Institutions are encouraged to form a portfolio of strategic alliances, some formal and others informal, some long-term and others short-term, to support the learning process and organization. It is imperative to make the partnerships real, and not just paper transactions. Partners must be given recognition and voice in the learning experience. Special attention may be needed to address the legal features of partnerships to everyone's satisfaction.

- **Learning Staff & Staff Development**–It is important to consider the make-up of the *learning staff* and their desired features. Learning staff are thought about in terms of learning teams as well as individuals. With increased emphasis on learning projects and informal learning, students are emerging as an important component of the learning staff. And, with stronger and more intense partnerships, the partners are increasingly viewed as a part of the learning staff. Staff development should focus on current and future needs, as well as consideration of who is in the best position to provide effective staff training. Instutitions must invest in needed staff development to make new designs work effectively. Some sites have included a three-year professional development plan for teachers coinciding with design recommendations and planning for a unique professional development settings within the educational institution.
- **Learning Environment**–The *learning environment* is frequently the point at which institution design groups choose to start the design process. This approach is discouraged because it is important to be clear about the desired features of the learning experience as a basis for designing a supporting learning environment. The learning environment, which includes decisions about technology, equipment, and facilities, extends well beyond the school or campus buildings to include all of the learning settings used by learners (for example, workplace, home, public library, and community). Smaller learning environments placed strategically around the community optimize the use of partnerships. The close blending of school or college and community ensures that learning is rigorous and relevant. A learning environment networked by computers provides each learner with essentially her or his own personal learning environment. Designing the learning environment begins with a detailed review of the learning process, organization, partnerships, and staffing, and then selection of the best supporting environment.

- **Learning Accountability**–*Learning accountability* addresses the need to take very seriously the recommendations and commitments of an institution's stakeholders in setting forth new designs for the institution. It ensures that there will be a reporting back on how the implementation is progressing and its impact on learning. The design attributes for accountability describe who is responsible and when and how reporting back will occur. The focus of accountability should tie directly back to the design criteria developed in the learning context element at the beginning of the design-down process and then to the design attributes developed in response to each of the other design elements. Institution staff are usually assigned the responsibility of developing measures or indicators of accomplishment that are acceptable to the policy-making group, typically the board/trustees in a public institution.
- **Learning Celebration**–*Learning celebration* addresses the need to align incentives and recognition of progress and success in moving toward new designs features. Many of our traditional learning celebrations need to be revised to communicate and reinforce the changes in learning and the operation of schools or colleges being recommended. Annual graduation ceremonies, quarterly competitive grades, and sports trophies may not be aligned with learning expectations that focus on preparing for lifelong learning; the challenges of work, family, community, and personal responsibilities; high expectations for all learners; and productively working together as a learning community. Learning celebrations should reinforce the design specifications for all elements of the design process, particularly the learning expectations and learning signature. Learning celebrations might include displays of student learning products located all through the institution and in many places in the community, closed circuit television screens around the institution showing the names and contributions of all the learning partnerships working on a given day, and teams of students being recognized by community-based organizations for their solutions to important community problems.
- **Learning Finance**–The *learning finance* element of the design process focuses broadly on costs and revenues for building and operating a new or restructured school or college. The goal is often to implement new designs in school or college with no more operating costs than for an average existing institution. Cost considerations often involve a trade-off among technology, staffing, and partnerships. The focus on revenue often leads to exploring new sources of revenue for the institution as a partner in social and economic development of a community. Working on the learning finance element has led to developing a new financial portfolio for the institution and a plan for securing needed community awareness and political support.

The design process follows this specified sequence so as to get careful alignment among the elements and to get "first questions first." The idea is to ensure that the design fits the needs of the local situation and proceeds in a logical order from aims to actions to supporting structure, processes, and environment, and last, to needed resources. The design process has emerged from research and best practices as well as the experience of working with several schools and colleges across the United States and in other countries.

No doubt, it will continue to change with more experience and as changes occur in the learning context. While the process is presented in a linear fashion, focusing on the most important questions first, there is also a need to move upwards and across all elements in the design process in order to gain the careful alignment needed for high quality and efficiency.

### *Project Products*

This project has two products: (1) a *Design Guide for Practice and Policy*, and (2) a *Compendium of Design Reviews of Related Research, Policies, and Exemplary Practices*. This report constitutes the second product, which was developed in the form of a compendium of individual design reviews.

## Compendium of Design Review of Research, Policies, and Exemplary Practices

This section of the report provides a description of the purpose and organization of the compendium of design reviews related to CTE.

### *Purpose of Compendium*

The purpose of the Compendium is to share the results of selected research, policies, and exemplary practices relating to each design element addressed in the project. The design reviews included in the compendium form an important part of the bases for the direction taken in the project's recommendations and in assessing the credibility of the recommendations in terms of research support. The design reviews, in conjunction with the Design Guide for Practice and Policy, should foster and support strategic thinking about practices and policies to guide high schools and community and technical colleges as relates to their career and technical education programs.

The design reviews were developed initially to brief the National Design Group as a means to enhance their discussions and insure that the project's recommendations were at the forefront of research, policy, and practice. The design reviews were also used in a similar way with the participants of the National Design Studios workshops and in other dissemination and technical assistance activities conducted during the project.

### *Organization of Compendium*

The Compendium is a collection of design reviews related to each of the 12 design elements. The reviews follow a sequential order throughout the document, each having a unique identification number, some may be out of sequence, as design reviews continued to be added for several design elements right up to the end of the project. An annotated bibliography of related research, policies, and practices from other sources follows each design section. As a summary, a cross-reference section is provided, which shows the relation among the design reviews and the design recommendations set forth by the project. A comprehensive reference list is presented at the end of the compendium. The appendices show a listing of authors of the design reviews and the individuals who have been involved in developing the design recommendations as National Design Group members, National Design Studio workshop participants, and resource persons or site visits as part of the project.

## Development of Design Reviews

The section that follows describes the strategy used to select the topics for design reviews and the format used for their presentation. Also described are the processes used to develop the design reviews and then to assign them to the design elements.

### *Selection of Topics*

Selection of topics for the design reviews was guided by the project's aim of developing a sound research, policy, and practice base for the emerging design recommendations. For each design element, the National Design Group was asked for recommendations concerning the concepts or ideas to be investigated, the places that should be visited, and people who should be contacted to help support the formation of viable and future oriented design recommendations. During project work and discussions at National Design Group meetings, additional topics were identified. The same process was used with participants at the National Design Studio workshops. All the while, the project staff also continually scanned professional literature and conference programs. Topics varied considerably in terms of focus, including book reviews, policy reviews, conceptual analyses, journal reviews, and exhibits of practice. Potential topics were then prioritized for development of design reviews within the constraints of staff time and project resources. It was not possible to develop a design review on all the topics that were identified as important.

### *Format of Reviews*

Early on in the project it was decided, based on the advice of the National Design Group and the experience of the project staff in providing technical assistance to schools and colleges, that the review of related literature would be much more useful if it were in the form of short reviews on specific topics rather than the traditional form of one, comprehensive, integrated review of literature. The short review format provided the opportunity to tailor the topics to needs in a particular context. This strategy also provided an avenue to continuously and easily update the review, individually and collectively.

The format of the reviews evolved from three different styles, each suited for a particular use, to one format that included a two- to three-page document for each selected topic addressing definition, key features, impact on learning, implications for new designs for CTE, and a reference list including websites. Earlier reviews were then reformatted to address the standard outline.

### *Process of Development*

Once the topic for a design review was selected, as explained above, materials were identified using electronic databases, professional association websites and publications, legislative updates and activities, and scanning of national conference programs relating to secondary and postsecondary education, particularly those focusing on career and technical education. Authors for the reviews were selected based upon their subject matter expertise and professional experience, research training, and ability to compose a review. Authors were provided with a format guideline and encouraged to search further for related materials as appropriate. As drafts of the design reviews emerged, the drafts were reviewed by project staff and suggestions made for further development. National Design Group members and National Design Studio workshop participants also provided feedback on many of the design reviews.

### Relation of Design Reviews to Design Elements

Each design review was originally developed within the context of one of the 12 design elements of CTE addressed in this project. Later in the project, as design recommendations evolved, it became apparent that there were many interrelationships among the design reviews and several of the design elements. For the purposes of presentation of design reviews in this compendium, each design review has been assigned to a primary design element. The multiple interrelationships of design reviews and design elements in more evident in the last section of the compendium that focuses on the relationship of design reviews and the project's design recommendations.

# Design Reviews for the Learning Context

## *New Designs for Career and Technical Education*
## *Design Review No. 1*

### Enterprise of Career and Technical Education in the United States

**Definition**

About $13,000,000,000 is invested in career and technical education programs each year by local, state, and federal government; about $1,000,000,000 is provided by the federal government under the Carl D. Perkins Vocational and Technical Education Act Amendments of 1998. For the nation, about 62% of Perkins funds go to secondary and 38% to postsecondary CTE programs. (National Association of State Directors of Vocational Technical Education Consortium, 2001, p. 1)

**Key Features–Secondary**

- 93% of the nation's 15,200 comprehensive high schools, grades 9-12, offer introductory vocational education courses; about 75% offer more specialized courses in one or more occupational areas (Lynch, 2000, p. 11).
- There are about 250 vocational high schools offering academic courses, but specializing in preparing for the workplace (Lynch, 2000, p. 11).
- There are about 1,100 area vocational centers where students attend vocational courses part of the day or evening for specialized vocational courses (Lynch, 2000, p. 11).
- The average high school graduate in 1994 earned 4.0 of her or his Carnegie credits in CTE courses (MPR, 2000, p. 2).
- "In 1994, 97 % of public high school graduates completed at least one vocational course" (MPR, 2000, p. 2).
- In 1994, about one in four students earned at least 3 credits in just one occupational area. (MPR, 2000, p. 2). If that percentage held for 1999-00 school year, that would amount to about 639,000 graduates (there were estimated to be about 2,560,000 public high school graduates in 1999-00) (McDowell, 2000, p. 23).
- The most popular vocational programs in 1994 for those who took at least 3 credits were trade and industry (34%), business (30%), and agriculture (12%) (MPR, 2000, p. 2).

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- "Generally, students who took 4 or more Carnegie credits (vocational specialists) from any one program area, including family and consumer sciences, were from special populations" Lynch, 2000, p. 14).
- "Among 1992 public high school graduates, members of special populations generally completed more occupationally specific courses than did other graduates. Students who had accumulated more remedial credits, were disabled, came from lower socioeconomic backgrounds, and had lower grade point averages earned greater numbers of occupationally specific credits than did other students" (MPR, 1995, p. 29).
- "From 1982 to 1994, high school students completed fewer vocational credits (4.7 in 1982 versus 4.0 in 1994), and the percentage of vocational concentrators (students completing three or more courses in a single occupational program) also declined (34% in 1982 versus 25% in 1994). Preliminary data for 1998 indicate that these trends are leveling off" (MPR, 2000, p. 2).
- Student demand for vocational education declined by 33% between 1982 and 1993; there is some evidence that demand has increased in the 1990's.
- In 1992, 55% of vocational concentrators enrolled in a postsecondary institution within two years of high school graduation. Of those who enrolled, 50% were in community colleges, 30% in four-year colleges and universities, and 20% in other postsecondary institutions (MPR, 2000, p. 3).
- Four out of five vocational concentrators graduating from high school in 1992 were working in December, 1993 (MPR, 2000, p. 3).

**Key Features–Postsecondary**

- Vocational education at the postsecondary level in public institutions is provided in about 720 degree-granting community colleges, 160 technical institutes or colleges that grant degrees, 500 postsecondary area vocational schools that do not grant degrees, 300 postsecondary schools serving only one industry, and 70 postsecondary skill centers for disadvantaged youth (Lynch, 2000, p. 12).
- There are about 2,490 private postsecondary schools offering vocational programs or courses (Lynch, 2000. p. 12).
- "In 1996, about half (49%) of sub baccalaureate students taking for-credit course at a postsecondary institution declared a vocational major." (MPR, 2000, p.4) If that percentage held for 2000, that would amount to about 750,000 students.
- In 1996, the number of adults nationwide who held a vocational associate's degree was about 7,000,000, while about 6,500,000 held a comparable academic degree. The number with academic degrees rose at a higher rate from 1992 to 1996 (from 6.6 to 7.0 million for vocational degrees and from 5.2 to 6.5 million for academic degrees) (MPR, 2000, p.4).
- The most popular vocational majors in 1996 were health (22%), business and office (29%), and engineering/science technologies (12%) (MPR, 2000, p.4).
- "In 1996, community colleges served seven of every 10 sub baccalaureate students (71%) reporting a vocational major" (MRP, 2000, p. 4).
- "Among vocational majors who first enrolled in postsecondary education in 1989-90, 42% of associate's degree seekers and 64% of those pursuing a certificate had achieved—or exceeded—their objective by spring 1994 (MPR, 2000, p.4).

**Impact on Learning**

- Career and technical education courses, programs, and certificates serve a broad range of learners with diverse needs.
- Slightly over half of secondary students taking career and technical education offerings pursue postsecondary education.

## Implications for New Designs

- Career and technical education leaders need to stay apprised of and influence Perkins reauthorization legislation for funding and allocation procedures.
- Career and technical education leaders need to collect and present useful data to demonstrate positive impact of career and technical education programs.

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## *New Designs for Career and Technical Education*
## *Design Review No. 2*

### Changing Nature of Work*

**Definition**

The nature of work is changing more rapidly now that at any other time in history due to technological advances, global economy and society, complexity of skills needed on the job, and organizational restructuring.

**Key Features**

Changes in the nature of work have been placed in the following four categories:

- **Changing Structure and Content of Work**–The four dimensions along which work varies and appears to be changing in significant ways are:
  - -Autonomy-control–degree of discretion and decision-making power.
  - -Task scope–range and breadth of tasks in a job.
  - -Cognitive complexity–degree of cognitive activity and analysis needed for the job.
  - -Relational or interactivity of work–social interactions and emotional quality are critical to job performance (i.e., *Emotional labor* is the new term for this).

- **Changing Nature of Blue-Collar Work**–Blue-collar production work is expanding to include:
  - -More analysis and decision-making tasks.
  - -High performance work teams.
  - -Greater integration of advanced technologies.
  - -Greater involvement with customers.

- **Changing Organization Structures**–New organizational structures have changed employee and managerial roles. The following five skills are necessary in the new organization:
  - -Managerial competency–ability to use combinations of directive and supportive relationships.
  - -Analytical competency–ability to understand complex situations, make decisions involving many elements, and retain overall vision.

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*National Research Council. (1999). *The changing nature of work: Implications for occupational analysis.* Washington, DC.

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-Integrative competency–ability to synthesize a useful systemic outcome from varying points of view expressed by individuals and organizational units.
-Collaborative competency–ability to work with others and place value on the formation of alliances.
-Organizational know-how–the ability to practice one's work within the context of the organization and its culture and politics, and effectively use political influence.

- **Changing Professional and Technical Work**–Four related trends account for the expansion of professional and technical work. They are:
  -Corporate growth–decreasing solo or individual practices and the growth of corporations changes the nature of accessing and providing resources.
  -Commercialization of scientific knowledge–creating entire new industries and technical occupations.
  -Demographic changes–increasing life spans and the diversity of the population create the need for more health and social service professions.
  -Technological advances–exploding need for use of technologies in all occupations.

## Impact on Learning

To prepare students for the changing workplace, secondary and postsecondary educational institutions must provide learning that offers achievement in the following skills:

- Understanding and meeting customer needs.
- Accessing pertinent information regarding the job in multiple and time-efficient ways.
- Identifying and solving of problems through research, critical thinking, trouble shooting, and decision-making.
- Being able to work alone and in teams.
- Applying knowledge and experience to a wide range of activities.
- Understanding of corporate and business cultures and systems.
- Seeking lifelong learning and upgrade of skills.

## Implications for New Designs

- Develop curricula that relate to current needs of the workplace and society.
- Use learning processes where students can learn and practice the above mentioned skills in addition to providing content.
- Design authentic assessment tools and methods for learners to demonstrate their ability to perform the needed skills within the context of the subject matter and the workplace.
- Provide career counseling and guidance that stays current with the changing nature of the workplace.

## *New Designs for Career and Technical Education*
## *Design Review No. 3*

### Changing Nature of Families*

**Definition**

Family structures are changing due to other societal, political, and economic influences. Contrasting key features of modern and postmodern families are listed below.

**Key Features of the Modern Family**

- Nuclear as ideal–Ideal form is two parents, one working and one staying at home.
- Romantic love–For each of us there exists one and only one person who is the ideal mate; couples waited for marriage to engage in sexual relations; marriage was regarded as lifelong commitment.
- Maternal love–Notion that mothers have an instinctive need to love and care for children; served as rationale for keeping women out of workforce.
- Domesticity–Belief that each family member owes primary allegiance to the home.
- Togetherness–Family must be placed ahead of self and that doing things for and with the family must take precedence over doing things for oneself and with friends.
- Parenting as intuitive–Did not have to go to college or read books to be good parents; use clear-headed common sense and natural inclinations.
- Children as innocent–Need parent guidance, limit-setting, and protection; childhood was very precious time, to be cherished and protected.
- Adolescents as immature–Need adult limit-setting, guidance, and support.

**Key Features of the Postmodern Family**

- Many forms–Nuclear family is but one of many forms, each of which can provide high-quality child rearing; some of the structures evident include single-parent, two-working parents, remarried, and adopted families.
- Consensual love–Young people began to have sexual relations with those they have no intention to marry; individuals have sexual relations by mutual consent and without lifetime commitment.

*Elkind, D. (1995, September). School and family in the postmodern world. *Phi Delta Kappan*, 8-14.
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- Shared parenting–Parenting is seen as shared by mother, father, and various caregivers.
- Urbanity–Boundaries between home and workplace, public and private, and child and adult are much more open and flexible (e.g., work at home, child-care at workplace); more of same information available to both children and adults.
- Autonomy–Each family member pursues his or her own interests and puts these interests before those of the family; home is a busy transportation center.
- Parenting as learned technique–Writers emphasize the how to do it practices and techniques for parents.
- Children as competent–Ready and able to deal with all of life's challenges; parent need for children who can deal more maturely with life issues and conditions; must deal with out-of home childcare from early age, cope with divorce, handle seeing people murdered or on drugs.
- Adolescents as sophisticated–Seen as quite knowledgeable about drugs, sex, sexually transmitted diseases, and modern technology; consider themselves equal to parents in decision-making competence.

**Impact on Learning**

- Invite and involve parents and other supportive adults into the learning place requires taking into account these different family structures.
- Provide flexible timeframes will be necessary for parental and adult involvement in the learning process.
- Continue staff and parent learning regarding child, adolescent, and adult development.

**Implications for New Designs**

- Partner with parents and other community agencies to teach youth to be responsible for their own learning and behavior.
- Include parent education programs in schools and colleges.

## *New Designs for Career and Technical Education*
## *Design Review No. 4*

### Analysis of Journals–Educational Leadership and Phi Delta Kappan*

**Definition**

K-12 education reform and design needs to ensure that all students are served - regardless of gender, race, age, and ability. Non-conformists, non-athletes, and introverts often feel isolation and alienation in schools. By paying more attention to the emotional needs of the students, teachers can play a part in reducing the sense of isolation and alienation. Current teacher shortages need to be addressed.

**Key Features**

- Strong leadership is essential in school reform.
- Public perception of schools is not always positive. Parent and teacher involvement is critical for reform designs.
- New and better forms of teacher compensation would have positive benefits for students, teachers, and education. Teacher education should emphasize a holistic approach rather than an emphasis on methodology and technique.

**Impact on Learning**

- Differentiated learning and personalization of students is important when planning curriculum.
- Standards-based education discriminates against low-achievers, at-risk students, and minorities. Students need more depth of knowledge than breadth of knowledge.
- Standards, assessment, and instruction should be aligned. Subject-matter departments and subject-area specialties fragment students' perceptions of the world. Assessment should be collaborative, authentic, and less stressful.
- Urban schools need improvement to address the needs of students from inner-city schools.
- There is great pressure on teachers to show their effectiveness.
- The teacher shortage can be addressed in several ways: abolish praxis tests for minorities, retain new teachers, support policies that pay teachers appropriately, mentor new teachers, and create partnerships between school districts and universities.

*This analysis focused on the 1999 volumes of *Education Leadership* and *Phi Delta Kappan*.
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**Implications for New Designs**

- Partnerships are critical to the success of students. Parents especially need to be involved in decision-making and their child's educational experience. Parent and community involvement would build more support for educational reform. Public and private schools should compliment each other and work together instead of competing with one another.
- Class sizes and schools should be smaller. More focused schools/academies help students put information in context.
- Government funding and initiatives often dictate how schools are managed instead of what is in the best interest of the students.
- Learning accountability needs to focus on what knowledge is acquired rather than how it is acquired.
- Working with technology can help make students more literate, improve their social skills, and prepare them for employment.
- None of the articles in these issues focused or rarely mention vocational/career and technical education.

# *New Designs for Career and Technical Education*
## *Design Review No. 5*

## New American High Schools*

### Definition
New American High School is a designation given by the U.S. Department of Education to a selected set of high schools (now about 30) that are preparing all students to meet the challenges of the 21st century. The schools are committed to all students achieving high academic standards and being prepared for postsecondary education, and providing students opportunities to learn about and explore careers. The first group of ten schools was selected with the assistance of the National Center for Research in Vocational Education.

### Key Features
New American High Schools differ from other high schools in their emphasis on the following strategies:

- **Focus on Learning**–All the core activities of the school concentrate on student learning and achievement.
- **High Expectations**–All students are expected to master the same rigorous academic material. High expectations are established for student achievement.
- **Staff Development**–Staff development and planning emphasize student learning and achievement.
- **Challenging Curriculum**–The curriculum is challenging, relevant, and covers material in depth.
- **Assessment**–Schools are using new forms of assessment.
- **Extra Support**–Students get extra support from adults.
- **Careers and College**–Students learn about careers and college opportunities through real-life experiences.
- **Small Schools**–Schools create small, highly personalized, and safe learning environments.
- **Technology**–Technology is integrated into the classroom to provide high-quality instruction, and students have opportunities to gain computer and other technical skills.

*U.S. Department of Education. (1996). *New American high school project.* Washington DC: U.S. Department of Education, Office of Vocational and Adult Education.

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- **Flexible Schedule**–Periods of instruction are longer and more flexible.
- **Partnerships**–Strong partnerships are forged with middle school and colleges.
- **Alliance**–Schools form active alliances with parents, employers, community members, and policymakers to promote student learning and ensure accountability for results.

**Impact on Learning**

- All students are expected to achieve high performance levels for all learning.
- Learning is student centered with a focus of preparing them for postsecondary education and successful careers.
- Curriculum and assessment methods reflect current needs of the community and workplace.

**Implications for New Designs**

- Organize learning to accommodate multiple ways of achieving high standards.
- Provide staff development opportunities that focus on developing curricula, learning processes, and assessments that support the standards of New American High Schools.
- Form partnerships with the community and business and industry to provide relevant earning opportunities and methods of assessment.
- Incorporate technology into appropriate learning activities.

# *New Designs for Career and Technical Education*
# *Design Review No. 6*

## High Schools That Work

### Definition

High Schools That Work (HSTW) is a network of 970 school sites in 22 states initiated in 1987 under the direction of Gene Bottoms at the Southern Regional Educational Board-State Vocational Education Consortium. It is an effort to engage state, district, and school leaders and teachers in partnership with students, parents, and the community to improve the way all high school students are prepared for work and further education.

### Key Features

- **High expectations**–Setting higher expectations and getting more students to meet them.
- **Vocational studies**–Increasing access to intellectually challenging vocational and technical studies, with a major emphasis on using high-level mathematics, science, language arts and problem-solving skills in the modern workplace and in preparation for continued learning.
- **Academic studies**–Increasing access to academic studies that teach the essential concepts from the college-preparatory curriculum by encouraging students to use academic content and skills to address real-world projects and problems.
- **Program of study**–Having students complete a challenging program of study with an upgraded academic core and a major.
- **Work-based learning**–Giving students and their parents the choice of a system that integrates school-based and work-based learning. The system should span high school and postsecondary studies and should be planned by educators, employers and employees.
- **Teachers working together**–Having an organization, structure and schedule giving academic and vocational teachers the time to plan and deliver integrated instruction aimed at teaching high-level academic and technical content.
- **Students actively engaged**–Getting every student involved in rigorous and challenging learning.
- **Guidance**–Involving each student and his or her parents in a guidance and advising system that ensures the completion of an accelerated program of study with an in-depth academic or vocational-technical major.

This Design Review was prepared by George H. Copa, Ph. D. and Yolanda Martinez for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

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- **Extra help**–Providing a structured system of extra help to enable students who may lack adequate preparation to complete an accelerated program of study that includes high-level academic and technical content.

- **Keeping score**–Using student assessment and program evaluation data to improve continuously the school climate, organization, management, curricula and instruction to advance student learning and to recognize students who meet both curriculum and performance goals.

**Impact on Learning**

The following comments, related to the impact of learning at High Schools That Work, were taken from external site reports from eight schools that are members of the HSTW system.

- **High Academic Expectations**–Ninth graders not prepared to do high school-level work; raising academic expectations; limited amount and quality of reading expected of students; courses not taught to high standards; low expectations of student performance; low college-prep standards; require students to take more mathematics and science; students not measuring up in academic performance; raise academic standards and expectations of students; plan and implement ninth grade transition program to assist students to "catch-up;" support teachers in experimenting with ways to make content more challenging and meaningful to students; engage and motivate students in deeper learning; raise academic standards; have teachers develop a syllabus for each course that is aligned with national standards and end-of-the-course exam process; students expected to take responsibility for their own learning.
- **Authentic Learning**–Use of authentic learning; use of interdisciplinary curriculum built around authentic problems; use of content and skills of vocational disciplines to do authentic projects; increase project-based learning methods; overlooking opportunities to connect to the workplace and possible future careers.
- **Integrated Vocational and Academic Studies**–Integrate academic and vocational studies; common planning periods to foster academic/vocational integration; use of interdisciplinary teams.
- **Small Learning Communities**–Implement small learning communities; small learning communities that are student-centered and support a climate of quality instruction, high academic standards, and high student achievement; incorporate small learning communities.
- **Access to Career and Technical Education**–Expand access to career and technical studies; expand internships and work-based learning opportunities; modernize course offerings; assist students in making decisions about vocations; preparing students for employment.
- **Extra Help**–Systems of extra help and tutorial service for students; provide extra help and tutorial systems; reduce rate of students failing.
- **Guidance and Advisement Systems**–Weak guidance and advisement programs; design and implement aggressive academic advisement system; teacher advisement system.
- **Parental Involvement**–Low parental involvement; making parents active partners in their children's program of study.
- **Educational Technology**–Students and staff lack technology skills; technical support and use of technology.
- **Pedagogy**–Lack of good instructional pedagogy; weak quality of instruction.
- **Partnerships**–Collaborative efforts with local employers; forming business and industry partnerships.

**Implications for New Designs**

- Design curricula and programs that integrate academic and career and technical education, meet high accountability standards, and are based upon national skill standards.
- Incorporate more active learning processes such as project-based learning.
- Develop authentic assessment methods to show progress and achievement.
- Provide career counseling and guidance to all learners.
- Organize learning in ways that foster sense of community.
- Encourage parental and adult involvement in learning activities.
- Provide staff development to explore and incorporate various pedagogies.
- Form partnerships with business and industry.
- Incorporate the use of technology in learning activities.

## *New Designs for Career and Technical Education*
## *Design Review No. 7*

## High Schools of the New Millennium*

### Definition

According to the *High Schools of the Millennium Report* (2000), the high-school experience can no longer be limited to the learning that occurs inside a traditional school building. To prepare young people for rapidly changing roles and responsibilities in work, family, personal, and community life, the experience needs to include and use all resources available in the community.

The high-school experience needs to be redesigned and school leaders need to engage with others in the community to support and enhance the education and development of young people in new ways. The report calls for the development of small, individualized, and caring learning communities to help students manage the transitions in their lives and to become lifelong learners.

### Key Features

- **Vision, standards, and expectations**–Should set a clear vision of standards and expectations for *all* youth that provide knowledge and skills necessary for successful employment and participation in society.
- **Using the community for learning**–Connections to and relationships with the community and its resources should support learning, assist young people in managing transitions, and instill lifelong learning.
- **Structure and organization**–Should be designed to provide small, personalized, and caring learning communities that focus on career, academic, and thematic topics.
- **Accountability**–Learning should be accountable to the school community and the larger community, and be assessed on a regular basis to provide feedback to the learner.

American Youth Policy Forum (2000). *High schools of the millennium report.* Washington DC. www.aypf.org

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- **Teaching and learning**–Learning should occur in a wide range of settings and contexts, in teams and independently, anywhere and anytime, and result in disciplined inquiry and engagement with community and world issues. All students are expected to engage in high academic achievement with the goal of postsecondary education that leads to careers (American Youth Policy Forum, 2000, p. vii).
- **Immersion in the adult world**–Learners should be provided with the opportunity of working with many adults in authentic learning experiences throughout the community.

- **New forms of assessment**–Multiple assessments should be used to provide on-going feedback to the learners and the community.
- **Principles of youth development**–Youth development should be enhanced through active engagement in school and community activities and create additional opportunities to achieve high academic success.

## Impact on Learning

The American Youth Policy Forum identified the following factors that are impacting learning at the secondary level:

- **Student performance**–Improvement in student learning is not keeping pace with today's economic and societal demands.
- **Standards-based reform**–Educators must address ways to help all students achieve high standards.
- **Assessment**–Measurement of student learning needs to gauge a learner's strengths and weaknesses on an ongoing basis and not rely solely on standardized tests.
- **Limited learning options**–High school classes are still dominated by lecture-based teaching that is not connected to the real world and does not involve community resources.
- **Urban schools**–Urban schools are still plagued by an over 50% drop-out rate and often lack resources or community support.
- **Disengagement from the learning process**–Students feel that high-school classes are not relevant and are seen as just a passage of time.
- **Global economy**–Employers often need to seek employees outside of the community due to a lack of skilled workers who have completed some postsecondary education.
- **Expansion of information through technology**–Learning can take place anytime and anywhere, and requires a different set of learning and teaching skills.
- **Teacher workforce**–The significant shortage of mathematics and science teachers and overall shortage of teachers is resulting in teachers assigned to teach in areas for which they have little preparation and leads to lower student learning.
- **Public interest**–Student safety and achievement was the number one concern of the public in 2000.
- **Legislative issues** – Federal, state, and local initiatives are placing additional pressures on all levels of education.

## Implications for New Designs

- Design and develop new approaches to the traditional high school that are inclusive and wide- ranging.
- Develop curriculum and learning experiences that help youth prepare for a global economy and society, highly skilled workplace, diverse society, and an encompassing use of technology.
- Create partnerships across the community to set a clear vision and goals for the learning experience of all youth in the community.

- Develop procedures for articulation of credit between secondary and postsecondary institutions.
- Hire teachers and staff who are capable of teaching in teams and integrating curriculum.
- Provide on-going staff development opportunities.
- Allocate resources in ways that support new thinking and methods for providing high quality learning experiences and encouraging lifelong learning.

## *New Designs for Career and Technical Education*
## *Design Review No. 8*

### Analysis of Journals-Techniques and Workplace*

**Definition**

Analysis of the 1999 and 2000 volumes of *Techniques* and *Workplace* journals provided the following key features to keep in mind when designing career and technical education at the secondary and postsecondary levels.

**Key Features**

- **Appropriate Resources**–Before entering into customized training, educational should consider if they have the resources (e.g., capability and willingness of faculty, flexibility of funding and governance structures) to respond to the need for quick, highly focused training.
- **Conflicting Goals**–When the workplace becomes a learning place, the learning experience will often need to be negotiated through conflicting goals and needs among the business, employees, learners, and the school/college to find a shared purpose.
- **Technological Literacy**–Anticipate the arrival of technology literate students and teachers; they will use the new technology as a learning tool.
- **Leadership**–Educational systems should be redesigned to attract, encourage, and retain innovative and effective leaders if they are serious about change.
- **Variety of Methods**–Successful learning for all students requires a variety of learning methods (e.g., on-going advances in contextual learning/integration).
- **Relevance**–Course content should be relevant to learner's needs and interests. Skill standards, SCANS, and similar materials provide important sources of information on learner's needs.
- **Adequate Resources**–Educational programs should be initiated and planned within current and anticipated resource constraints (e.g., provision for program revisions and/or sun-setting options should resources, regulations, or labor markets change).
- **Sound Evaluation**–Designs should include methods of evaluation that will stand official muster, while allowing students to learn effectively.

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*This analysis focused on the 1999 and 2000 volumes of *Techniques* and *Workplace*.
This Design Review was prepared by Denis Green for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

This design review was prepared as part of the project, New Designs for Career and Technical Education at the Secondary and Postsecondary Levels, which is a part of the program of work for the National Research Center for Career and Technical Education headquartered at the University of Minnesota and funded by the Office of Vocational and Adult Education in the U.S. Department of Education, PR/Award (No. V051A990006.) However, the contents do not necessarily represent the positions or policies of the Office of Vocational and Adult Education or the U. S. Department of Education, and you should not assume endorsement by the Federal Government. This project was directed at Oregon State University, a partner institution in the National Center. The Project Director is George H. Copa, Professor, School of Education, Oregon State University, Corvallis, Oregon. For more information, see the website for New Designs for Learning at Oregon State University at http://newdesigns.orst.edu. This design review is part of a larger series of reviews presented in the report: Wolff, S. J., & Copa, G. H. (2003). *New designs for career and technical education at the secondary and postsecondary levels: Compendium of design reviews of related research, policies, and exemplary practices.* Minneapolis, MN: National Research Center for Career and Technical Education, University of Minnesota. The full report is available on the above website.

- **Learning Transfer**–The concept of the transfer of learning from school to college and school/college to workplace should become real and common practice.
- **Partnerships**–Partnerships by whatever name should be a key ingredient to the design of educational programs. Resources and flexibility are sought-after benefits. A nagging question is that with resource dependence comes the possibility of undue influence on the educational program by the partner.
- **All Students**–Career and technical education programs and systems should be inclusive of bright students wanting high-level technical skills and those needing special help. While creating a new image, designers and practitioners must assist those with attributes and skills sets not valued by the modern economy or majority culture.
- **Realistic Optimism**–Design efforts should work to radiate realistic optimism and sustainable energy, the opposite of flash and fizzle, and be rooted in the success of student (in school and beyond) and needs of local communities.

### Impact on Learning

- Provide learning for all students using a wide range of activities and settings.
- Design learning that is relevant and meaningful to the learner and to employers.
- Incorporate high standards and assessment methods to demonstrate achievement of learning outcomes.
- Provide opportunities to practice and transfer learned skills to the workplace and community.
- Ensure that all learners become technology literate.

### Implications for New Designs

- Examine resources (faculty, staff, funding, governance) to determine feasibility of starting and sustaining programs for the duration of need.
- Determine learning goals that meet the needs of the institution as well as that of the learners and employers.
- Incorporate appropriate learning technologies for teaching and delivery of programs.
- Develop staff development opportunities to stay current in content, teaching and delivery methods, and development of appropriate assessment methods.

## *New Designs for Career and Technical Education*
## *Design Review No. 9*

### Analysis of Journal–Community College Journal*

### Definition

Community colleges are redesigning themselves to keep pace with the rapid changes in society and the economy and to continue to be leaders in providing accessible learning for a wide constituency of learners.

### Key Features

The following features should be considered in redesigning community colleges:

- **Learner Focused**
  -Design methods for reaching and serving non-traditional learners and those who have had less than successful learning experiences.
  -Provide access to learning for those seeking basic skills, career preparation, career enhancement, college transfer, and self-development courses and programs.
  -Offer services and financial assistance to gain access to learning opportunities.
  -Offer support services in terms of student success, mentoring, tutoring, and career guidance and counseling.

- **Workforce and Community Needs**
  -Be proactive and responsive to industry needs for a skilled workforce.
  -Develop agreed upon educational standards.
  -Take leadership role for economic and community development activities.
  -Increase and improve communication with business and community partners.

### Impact on Learning

- Provide learning at times, places, and in ways that meet the diverse needs of learners.
- Work with public schools to prepare students for success in postsecondary education.
- Prepare learners for further education and lifelong learning.
- Prepare learners for rapidly changing, high-tech job markets.

*This analysis focused on the 1999 volume of *Community College Journal*.
This analysis was prepared by Matt Dawson for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

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- Prepare learners with work place skills and for community roles.
- Seek and provide financial assistance for those in need.

**Implications for New Designs**

- Seek and secure funding from a wide range of sources.
- Develop partnerships with business and industry, community, and other educational providers to improve the relevancy of learning and assessment.
- Contribute to research on the community college and its impact.
- Incorporate technology in the workplace, the classroom, and in communities and use if for delivery of instruction and services.
- Provide staff development opportunities for use of technology to enhance the educational experience.

## *New Designs for Career and Technical Education*
## *Design Review No. 10*

### Analysis of Strategic Plans from Community Colleges*

### Definition

Community colleges across the country are recognizing the need to reevaluate their strategic plans on a continual basis in order to keep pace with or lead changes occurring in education, the economy, communities, and needs of learners.

### Key Features

An analysis of selected community college strategic plans provided the following list of key features for college leaders to pay attention to regarding career and technical education.

- **Diversity**
  - -Address the needs of students of color and students with disabilities.
  - -Diversify faculty and staff.
  - -Diversify curriculum, policies, and procedures.
- **Funding**
  - -Find ways to obtain additional revenue resources for colleges.
  - -Create new marketplaces to generate revenue for colleges.
- **Meeting Marketplace Demands**
  - -Find ways to meet the demands of new and emerging markets in a timely manner.
  - -Increase training provided to meet labor force needs.
- **Partnerships**
  - -Continue to build partnerships with businesses, organizations, and the community to assist students with their transition from school to work.
- **Programs and Scheduling**
  - -Provide flexibility in class schedules, which meet student needs.
  - -Provide flexibility in class offerings, which meet student needs.
- **Technology**
  - -Increase use of technology, both in the classroom and in the community.

This Design review prepared by Karen Edwards for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

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***Colleges Reviewed**:
**Rural**: Blue Mountain Community College (OR)
**Suburban**: Fox Valley Technical College (WI); Front Range Community College (CO); Hagerstown Community College (MD); Johnson County Community College (KS); Northampton Community College (PA); Skagit Valley College (WA)
**Urban**: Central Piedmont Community College (NC); Clover Park Technical College (WA); Kingwood College (TX); Maricopa Community College District (AZ); Miami-Dade Community College (FL); North Harris Montgomery Community College (TX); San Diego Community College District (CA); Sinclair Community College (OH)

**Impact on Learning**

- Keep learner needs at the forefront of college planning.
- Provide learning opportunities that support the needs of diverse students.
- Provide learning opportunities that are flexible in terms of times and locations offered.
- Offer training and lifelong learning opportunities.

**Implications for New Designs**

- Identify learning audiences that are not currently being served.
- Review existing policies and procedures and if needed, develop policies and procedures that are student friendly.
- Design and offer programs in a timely manner.
- Create partnerships with the community and business and industry to assist students from school to work.
- Hire and develop staff and faculty who are diverse.
- Use technology in the classroom and for delivery of instruction.
- Seek alternative funding sources.

## *New Designs for Career and Technical Education*
## *Design Review No. 11*

### Connecting Communities, Learners, and Colleges*

**Definition**
Colleges must strengthen connections to their communities, their learners, and within the colleges to remain viable in an increasingly competitive, complex, and ever changing arena.

**Key Features**
The New Expeditions Project undertaken by the American Association of Community Colleges and the Association of Community College Trustees identified the following reasons for colleges to strengthen connection:

- **Civic role**–Provide for and model civic awareness and skills that enhance current and future community leaders.
- **Employers and the economy**–Expand services to emerging, existing, transitional, and entrepreneurial workers and increase awareness of global and economic diversity.
- **P-16 connections**–Strengthen partnerships with public schools and universities to prepare people for careers and for lifelong learning.
- **Learner centered colleges**–Embrace learning and learning outcomes.
- **Access, inclusiveness, and equity**–Increase incentives, support services, and opportunities for people seeking education and training.
- **Curriculum**–Provide array of experiential learning opportunities that integrate academics and technology.
- **Credentialing**–Identify alternative approaches that augment academic transcripts to fully communicate the learner's skills, knowledge, and relevant experience.

*The New Expeditions initiative is a joint project of the American Association of Community Colleges (AACC) and the Association of Community College Trustees (ACCT). This effort, funded in 1998 by the W. K. Kellogg Foundation, has resulted in a report titled *The Knowledge Net*. The report is intended to serve as an agenda for the first part of the 21st Century for junior colleges, community colleges, technical colleges, tribal colleges, state colleges and institutes.

This Summary analysis was prepared by Susan J. Wolff, Ed. D., for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

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- **Human resources**–Create positive work environments, hire diverse and competent staff, and strengthen leadership programs.
- **Technology**–Integrate technology into curriculum, processes, and support mechanisms.
- **Accreditation**–Ensure the accrediting process meets quality assurance and public accountability.
- **Governance**–Recognize and respect governance of locally connected governing boards. Define roles clearly and work as a team.
- **Finance**–Advocate for flexible funding and seek allies who share common goals in order to accommodate increased enrollment and service needs.

**Impact on Learning**

- Prepare learners for postsecondary education and workplace.
- Provide smooth transitions for next steps, be it education or work.
- Provide flexible learning opportunities for diverse student needs.
- Add to value of educational experience by providing multiple credentialing and certification routes to signify learning and achievement of outcomes.

**Implications for New Designs**

- Increase access to education and services to learners and the community.
- Provide leadership training for the community and within own institution.
- Partner with other agencies and providers to offer multiple lifelong learning opportunities.
- Demonstrate civic responsiveness by being a community leader.
- Demonstrate fiscal responsibility by sharing of resources with and seeking flexible funding from the community.

## *New Designs for Career and Technical Education*
## *Design Review No. 12*

### Learning-Centered Colleges

**Definition**
Learning centered colleges are those that "place learning first" (O'Banion, 1997, p. xiv) and "redesign their learning system to align entire enterprise with personal, civic, and work place needs of the 21st century" (Wingspread Group on Higher Education, 1993, p. 19).

**Key Features** of a Learning College (O'Banion, 1999) are:
- **Create** substantive change in individual learners.
- **Engage** learners in the learning process as full partners who must assume primary responsibility for their own choices.
- **Offer** many options for learning as possible.
- **Assist** learners to form and participate in collaborative learning activities.
- **Define** the roles of learning facilitators in response to the needs of the learners.
- **Document** improved and expanded learning

Engagement of these features requires the following characteristics of the college's structures and systems (Michigan Community College Association and Michigan State University, 1998):
- **Facilitate/coordinate/communicate** actions and information.
- **Create cross-functional teams** of students, staff, and faculty
- **Recognize need for being user friendly** with all constituents.
- **Evolve** as community and employer needs change.
- **Provide bridges** between and among internal and external constituents.
- **Decentralize** processes and decision making.
- **Empower/encourage** all staff and students.
- **Encourage collective ownership** of processes and results.

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## Impact on Learning

- Focus on learning activities and outcomes.
- Assess and document achievement of learning.
- Provide for students to become partners in the learning process.
- Engage learners to take responsibility for their own learning.
- Increase access to and collaboration with internal and external learning partners.

## Implications for New Designs

- Encourage learning processes that meet individual needs.
- Offer professional development for faculty and staff to learn roles of facilitating learning.
- Create learning partnerships with community, business and industry, and educational institution leaders.
- Provide opportunities to learn and work in teams.
- Document learning outcomes.
- Share in governance and responsibility for learning.

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O'Banion, T. (1999) *Launching a learning-centered college.* Mission Viejo, CA.League for Innovation in the Community College and PeopleSoft, Inc.

O'Banion, T. (1997). *A learning college for the 21st century.* Phoenix, AZ: The Oryx Press. American Council on Education and American Association of Community Colleges.

## *New Designs for Career and Technical Education*
## *Design Review No. 13*

### Community Colleges Leading Change*

### Definition

Community colleges were legislated and designed to offer comprehensive course offerings including two-year degrees, vocational or career and technical education, basic education, and non-credit courses and programs to people living within designated service districts. The combination of intensifying market forces and unresolved tensions mandates consideration of a different type of organization [community college]—one that is *contradictory* in nature.

### Key Features

To thrive in the 21st century, community colleges will need to focus on:

- **Changing market forces**–Include the need for aggressive alliances and outreach in which service, innovation, and flexibility become essential to success.
- **Students with changing needs and expectations**–Students are clients who want terrific service, convenience, quality, responsiveness and flexibility. They will go wherever they can to receive what they want and need.
- **New competitors**–Growing number of "for-profit" institutions setting up storefronts near campuses. Other players include cable companies, corporate universities, course software developers, virtual delivery, and public/private partnerships.
- **Technology**–Will profoundly affect every aspect of education; what students learn, where they learn, and how they learn. More than 50% of households in the U.S. have at least one computer.
- **Performance and accountability**–Colleges are expected to perform, to document their performance, and to be accountable for producing return on taxpayer and student investment. This dynamic will be reflected in performance indicators, performance funding, performance contracting and performance pay.

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*Alfred, R. & Carter, P. (2000) *Contradictory colleges: Thriving in an era of continuous change.* American Association of Community Colleges. Community College Press. Annapolis, MD.

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- **Tradition while simultaneously creating revolutionary change**–Colleges will succeed through nurturing core competencies, through continuous change, and through frame-breaking change.
- **Value**–For all constituents.

### Impact on Learning

- Provide learning at times and places that are convenient to the learner.
- Meet needs of diverse constituents and add value to the learning experience.

### Implications for New Designs

- Examine and evaluate offerings and processes on a continual basis to ensure meeting of learners and communities needs.
- Determine accountability standards that provide assurance of quality and efficiency.
- Link to the workplace, community, and homes through technology.
- Conduct continuous market analysis and stay competitive and accessible.
- Design new ways of doing business with emphasis on partnerships.

## *New Designs for Career and Technical Education*
## *Design Review No. 14*

### Transformation in Higher Education*

### Definition

Higher education has transformed as society has moved from the industrial age into the information age. The speed in which all aspects of society and economy continue to change will require that higher education redevelop itself at a far more rapid pace than ever before.

### Key Features

In contrasting the industrial age with the information age, the following **changes** will occur in higher education:

| Industrial Age | Information Age |
|---|---|
| Teaching franchise | Learning franchise |
| Provider-driven, set time for learning | Individualized learning |
| Information infrastructure as support tool | Information infrastructure as the fundamental instrument of transformation |
| Individual technologies | Technology synergies |
| Time out for education | Just-in-time learning |
| Continuing education | Perpetual learning |
| Separate learning systems | Fused learning systems |
| Traditional courses, degrees, and academic calendars | Unbundled-learning experiences based on learner needs |
| Teaching and certification of mastery are combined | Learning and certification of mastery are related, yet separable issues |

*Dolence, M. G., & Norris, D. M. (1995). *Transforming higher education: A vision for learning in the 21st century*. Ann Arbor, MI: Society for College and University Planning.

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| | |
|---|---|
| Front-end, lump sum payment based on length of academic process | Point-of-access payment for exchange of intellectual property based on value added |
| Collections of fragmented, narrow, and proprietary systems | Seamless, integrated, comprehensive, and open systems |
| Bureaucratic systems | Self-informing, self-correcting systems |
| Rigid, predesigned processes | Families of transactions customizable to the needs of learners, faculty, and staff |
| Technology push | Learning vision pull |

### Impact on Learning

- Access to global information network.
- Access to unlimited library collection.
- Need flexible, value-added curriculum.
- Need flexible schedule of classes delivered in a variety of ways, including simulations.
- Need flexible payment options.
- Want personal attention from faculty/mentors.
- Seek personalized instruction and lifelong learning.

### Implications for New Designs

- Provide access to technology in various ways to accommodate learner and faculty needs.
- Provide access to global networks and library collections with free text search capabilities.
- Organize in ways that provide personal attention to learners and support faculty being mentors.
- Organize time and classes in flexible ways.
- Provide flexible options for financing education.
- Offer learning that adds value to the individual needs of the students.

## *New Designs for Career and Technical Education*
## *Design Review No. 15*

### National Assessment of Vocational Education, Final Report to Congress, 1994*

**Definition**

The 1994 National Assessment of Vocational Education Final Report given to Congress in 1994 provided direction for the reauthorization and amendments of the Perkins Act. National educational reform and its link to workforce development were emphasized in the report.

**Key Features**

The next Perkins Act should develop three principles:

1. **Integral**–Vocational education should become an integral part of a reformed American educational system of education and training (e.g., access for all students, multiple entry and exit points, clear educational pathways, quality programs, high standards, information, and linkages to the labor market).
2. **Quality**–Vocational education should be high quality (e.g., competency-based, industry involvement, industry-oriented skill standards, attention to academic and employability skills).
3. **Access**–Vocational education should be accessible to all students (e.g., including disadvantaged, limited English proficient, other special populations) (p. 1-2).

**Impact on Learning**–in the context of workforce development includes the following:

- **Audience**–Encompass all non-college-bound and some college-bound students.
- **Careers, not Jobs**–Prepare students for careers rather than jobs.
- **Broad Frameworks**–Broaden the curriculum framework from occupations to industries or more inclusive constructs.
- **Secondary Focus**–Emphasize the development of cognitive skills, broad technical skills, and understanding of industries at the secondary level.

*Boesl, C., McFarland, L., Hudson, L., Deich, S., Masten, C., Rahn, M., Muraskin, L., Hollinger, D., & Harvey, J. (1994). *National assessment of vocational education. Final report to Congress. Summary and recommendations*. Vol. I-V. Washington, DC: Office of Educational Research and Improvement. U.S. Department of Education.

This Design Review was prepared by Susan J. Wolff, Ed. D. for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

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- **Primary Applications**–Emphasize the use of applications to teach underlying principles (e.g., how electricity works) before teaching occupational procedures (e.g., steps in repairing an air conditioner).
- **Work Experience**–Use work experience, including jobs students find for themselves, to increase understanding of issues such as how the labor market functions and what skills and personal qualities the workplace requires.
- **Preparation for Further Education**–Prepare most students for some form of postsecondary education (e.g., two-year college, technical college, four-year college) and additional training).
- **Postsecondary Focus**–Defer much, but not all, occupation-specific training to the postsecondary level.
- **External Standards**–Be competency-based; be geared to high, external standards; be assessed by valid, reliable methods; and lead to portable certification.
- **Other Essentials**–Allow for other essential courses, such as academics (p. 54-55).

**Implications for New Designs**

- Design curricula and programs based upon industry-identified skills and knowledge and includes components of work-based learning.
- Integrate academics, career and technical education, and career guidance and counseling.
- Create links and articulation agreements between education levels that clearly state learning expectations at each level.
- Design assessment methods that allow students to demonstrate achievement of learning expectations.

## *New Designs for Career and Technical Education*
## *Design Review No. 16*

### Perkins Act of 1998 and Plan for Assessment of Vocational Education

### Definition

In 1963, Representative Carl D. Perkins from Kentucky introduced a bill to Congress to replace the 1917 Smith-Hughes Vocational Education Act. Since its initial passage in 1963, amendments to the bill have followed in years 1968, 1984 with the addition of serving special populations, 1990 with the addition of Tech Prep, and reauthorization in 1998 that was tied to the School-to-Work Opportunities Act passed in 1994.

### Key Features

The Perkins Act of 1998 provided direction for career and technical education at the secondary and postsecondary level to include the following features:

- **Involvement**–Of business, labor, teachers, and parents with the planning, developing, implementing, and evaluating of career and technical courses and programs.
- **Integrate**–Academic and career/technical courses with each other and with the work place to develop career-relevant courses and programs.
- **Increase numbers**–Of courses and programs to prepare students for careers in areas of significant workforce shortages.
- **Relate to the workplace**–Career and technical programs need to relate to careers in the workplace and prepare students for those careers.
- **Core Indicators**–Identify core indicators of performance.
- **Performance**–Identify levels of performance for each core indicator.
- **Expand opportunities**–For student internships, cooperative education, or job shadowing.
- **Expand access**–To quality, state-of-the-art technology in career/technical education.
- **Linkages**–Create effective links between secondary and post-secondary systems to reduce duplication and fragmentation of programs and skills.
- **Prepare for future**–Students need to be prepared for entry into post-secondary education or for entry into high-skill, high-wage jobs in current and emergent occupations.

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- **Placement**–Improve placement activities to reduce the number of students dropping out of programs.
- **Lifelong learning**–Prepare students for lifelong learning.
- **Professional development**–Provide professional development opportunities for academic and career/technical faculty, guidance counselors and administrative personnel.
- **Special populations**–Inclusive of individuals with disabilities, from economically disadvantaged families, nontraditional training and employment, single parents and single, pregnant women, displaced homemakers, and those who have other barriers to accessing education; i.e., limited English proficiency.

Impact on Learning–The National Assessment of Vocational Education, taking place in 2002 and following the guidelines in the 1998 Perkins Act, assesses learning by reviewing the following:

- **Strategies to improve the performance of vocational students**–How does or can vocational education contribute to improving academic and occupational skills, access to post-secondary education and earning?
- **Pathways**–For sub-baccalaureate students to prepare for careers. What is the contribution of workforce reform efforts to improving their training?
- **Policy shift**–From set-asides and legislative prescription to flexibility and accountability. How will this improve program quality and student outcomes? How will special populations fare?
- **Program assessment**–Program management will be assessed on accountability and use of funds.

Specific areas of evaluation for secondary vocational education are: (a) participation, outcomes, and impact; (b) quality; and (c) effectiveness of promising strategies. Specific areas of evaluation for post-secondary vocational education are: (a) participation, pathways, outcomes and impact; and (b) alignment with the Workforce Investment Act.

### Implications for New Designs

Core indicators and sub-indicators for state accountability systems and programs using Perkins funds include the following:

**Core Indicator 1: Student Attainment**

- Secondary and postsecondary academic and vocational and technical skill attainment.

**Core Indicator 2: Credential Attainment**

- Secondary completion, and proficiency credential with secondary diploma.
- Postsecondary degree or credential.

**Core Indicator 3: Placement and Retention**

- Secondary and postsecondary retention and placement.

**Core Indicator 4: Participation in and Completion of Non-Traditional Programs**

- Participation in and completion of secondary and postsecondary non-traditional programs.

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## *New Designs for Career and Technical Education*
## *Design Review No. 17*

### School-to-Work Programs

**Definition**
The School-to-Work Opportunities Act, passed in 1994 and administered jointly by the United States Departments of Education and Labor, resulted from national concern that students in the United States were not being adequately prepared for rapidly changing workplaces or for career path opportunities (Institute on Education and the Economy, 1999). The legislation calls for business education partnerships that focus on creating transitions from school-to-work through internships or apprenticeships.

**Key Features**
The federal legislation allows states to implement local and statewide school-to-work systems (Kelly, 1997) that:

- Offer all students the opportunity to access performance-based education and training.
- Are integral to comprehensive education reform.
- Are integrated with similar systems developed through Goals 2000: Educate America Act and The National Skills Standards Act of 1994.
- Enable students to earn portable credentials.
- Prepare individuals for first jobs in high-skill, high-wage careers.
- Increase opportunities for further education.

Congress encouraged states to use funding to:

- Use workplaces as learning centers in the educational process.
- Use federal funds as "venture capital" for initial planning and establishment of statewide systems supported by other federal, state, and local resources.
- Promote partnerships among public schools, colleges and universities, public employers, community-based organizations, and businesses to develop and manage programs.

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- Expose students to a wide variety of career opportunities through tech-prep, youth apprenticeships, school-sponsored enterprises, and business-education compacts to improve student knowledge and skills by integrating academic and career and technical education.

## Impact on Learning

School-to-Work programs generally include the following aspects (Ngeow, 1998):

- **School-based learning**–Integrates high academic standards with workplace skills. High academic standards start with a strong foundation of basic skills such as reading, writing, communication, and mathematics and then move to acquiring a broad range of knowledge that is both understood and applied.
- **Work-based learning**–Allows learners to develop skills and apply knowledge in an actual work site. Provides opportunity to put creative thinking, decision-making, problem-solving, and reasoning into practice.
- **Activities that link school-based and work-based learning**–Provides program coordination and support for learners, schools, and employers for career counseling, post-secondary education, and job placements.
- **Career development and planning**–Builds supportive framework with students, parents, and employers to determine career interests and paths, conduct self-assessment of job readiness skills, and provide labor market information.

## Implications for New Designs

- Develop partnerships with local employers to create school-to-work opportunities, youth apprenticeships and internships, and to help students access jobs.
- Design curricula to integrate school-based and work-based learning experiences.
- Provide time and support to teachers, faculty, counselors, and job placement staff to form partnerships with business contacts, to develop curricula and assessment plans, and implement learning experiences.
- Create seamless transition processes between public school levels and postsecondary institutions.

## References

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Kelly, K. J. (1997, April). *School to careers: Background paper 97-8.* Carson City, NV: Research Division, Nevada Legislative Counsel Bureau.

Ngeow, K. Y. (1998). *School-to-work transition in language arts classrooms: School-based learning approaches and practices.* Bloomington, IN: ERIC Clearinghouse on Reading, English, and Communication. (ERIC Document Reproduction Service No. ED424590).

## *New Designs for Career and Technical Education*
## *Design Review No. 18*

### Workforce Investment Act of 1998

**Definition**

The Workforce Investment Act (WIA) of 1998 required that one-stop delivery systems be developed and implemented to integrate federally funded employment and training services originally administered by varying agencies (Imel, 1999). According to Beaulieu (2000), WIA is intended to mobilize states and localities to design and implement creative employment programs for current workers, potential employees, and local employers and strengthen skills and knowledge of people currently receiving public assistance to become more competitive in the workplace (p. 1). This act is often described as one of the most comprehensive workforce improvement programs ever enacted (Beaulieu, 2000 & Immel, 1999).

**Key Features**

- **Inclusiveness**–Serves all populations.
- **Skills standards**–Recognizes that development and incorporation of industry-based skills standards are the lynchpins for career and technical education.
- **Consolidate**–Requires all governmental, social service, and educational entities to consolidate workforce development activities which include:
  - -Codifying of one-stop centers.
  - -Consolidating and increasing accessibility of customer information and choices.
  - -Involving employers in activities and planning.
  - -Providing more opportunities for non-English speaking students and those with disabilities.
  - -Recognizing other special populations; (i.e. Native American, migrant-seasonal workers and Veterans).
- **Accountability**–Requires program accountability and renewed funding based upon measurable outcomes.

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- **Individual state plans**–Recognizes and encourages differentiated outcomes for each state. Requires states to prepare and submit unified five-year plans, which address communication systems, data collection and dissemination systems, and reporting and seeking public comments.
- **K-20 connection**–Requires public schools, colleges, and universities to work more closely
- **Adult literacy**–Includes emphasis on increasing adult literacy.

## Impact on Learning

- Provide tutoring, study skill training, retention services, and instruction to prepare youth and adults for careers.
- Design alternative high school programs to provide options for attaining educational goals.
- Include work experiences, internships, and job shadowing opportunities.
- Coordinate summer work programs that are linked with academic and career and technical education.
- Provide basic literacy to enhance employability, career development, and life skills.
- Develop individual learning and training plans and short-term training programs that provide opportunities to learn and practice workplace skills.

## Implications for New Designs

- Bring together career and technical education and adult educators to partner with community agencies to provide innovative work force development systems.
- Coordinate employer and welfare services across programs and funding sources.
- Develop mutually agreed upon service assessment and reporting.
- Provide universal services based upon client need and delivered in ways that are easily self-accessible and usable by the person seeking services.
- Provide well-educated teachers and faculty, career counselors and job placement coordinators, facilities, computer technology, educational materials, courses, and parents to work with business and industry and community agencies to deliver needed services.

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Beaulieu, L. J. (2000). *Rural schools and the workforce investment act.* Washington, DC: U. S. Department of Education (Contract No. ED-99-CO-0027). (ERIC Document Reproduction Service No. ED448967).

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Kaufmann, B. A. & Wills, J. L. (1999). *User's guide to the workforce investment act of 1998: A companion to the law and regulations.* Alexandria, VA: Association for Career and Technical Education.

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## *New Designs for Career and Technical Education*
## *Design Review No. 19*

### No Child Left Behind Act of 2002

### Definition

Since 1965, the federal government has strongly influenced K-12 schools in this country. Through subsequent years of various funding initiatives, there has been little evidence collected to indicate if these initiatives improved learning. Today, the academic achievement gap continues to grow. To address this gap, the *No Child Left Behind Act* was passed by Congress and signed by the President on January 8, 2002.

Seen as a blueprint for action, the Act will:

- **Increase accountability for student performance**–Improved achievement will be rewarded, sanctions will be applied where achievement is not demonstrated, parents will be kept informed of their child's progress, and states will conduct mathematics and reading assessments in grades three through eight. Specifically, a sample of students in each state will be assessed annually with the National Assessment of Educational Progress (NAEP) 4th and 8th grade assessment in reading and mathematics.
- **Focus on what works**–Federal dollars will be allocated for effective, research-based programs and practices and focus on improving schools and teacher quality.
- **Reduce bureaucracy and increase flexibility**–States and local districts will have flexibility in the funding, which will be increased at the local level.
- **Empower parents**–Parents will be kept informed of their child's progress and that of the school. Parents will have the choice of moving their child to a higher performing public or private school or receive supplemental educational services if the current school is not performing at expected standards.

### Key Features

Priorities for the Act include:

- Improving academic performance of all students, including disadvantaged students.
- Boosting teacher quality.

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- Moving limited English proficient students to English fluency.
- Promoting informed parental choice and innovative programs
- Encouraging safe schools for the 21st century.
- Increasing funding for Impact Aid.
- Encouraging freedom and accountability.

## Impact on Learning

- **Improve literacy**–States will be eligible for grants and targeted for reading programs in kindergarten through 2nd grade, under a new Reading First Initiative by establishing comprehensive reading programs based upon scientific research.
- **Increase flexibility of Title I funds**–State, local, and federal funds will be combined to improve the quality of the entire school.
- **Expand charter options for states and districts**–Categorical program requirements will be dropped if the state and/or district sign a five-year performance agreement that requires rigorous standards and has approval of the Secretary of Education.
- **Expand options for parents and students**–Innovative efforts to expand parental choice will be funded.
- **Improve teacher quality**–Funding will be allocated in a flexible manner to improve effectiveness of teachers.
- **Strengthen mathematics and science education**–Partnerships with institutions of higher education for science and mathematics education will focus on strengthening curriculum and instruction.
- **Promote safe schools**–Funding will be increased to promote safety and drug prevention during and after school, remove students from unsafe schools, and support character-building activities into the classroom.

## Implications for New Designs

- Develop a framework within the context of state-determined high standards for all, accountability measures, and flexibility for schools, teachers, and parents.
- Provide high quality learning for all students and close the achievement gap between disadvantaged and minority students and their more advantaged peers.
- Focus on research-based practices to demonstrate achievement.
- Improve quality of instruction and learning for K-12 teachers, principals, and administrators.
- Recruit and retain quality instructors by providing incentives.

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## *New Designs for Career and Technical Education*
## *Design Review No. 20*

# International Perspective on Vocational Education and Training*

### Definition

The German system of vocational education and training has long been considered a model for quality and delivery. However, according to Mohen and Wossner (1999), with the vast changes taking place globally, it was time for review and reform of that system (p. 7). The Bertelsmann Foundation awards the annual Carl Bertelsmann Prize for exemplary social innovations. In 1999, the prize focused on improving vocational education and training and involved an international search for innovations in career and technical education.

### Key Features

A review of vocational education in countries around the world was conducted using the following criteria as bases for selecting five countries for more detailed study:

- **Cooperation of Key Players within a Defined Framework**–Joint responsibility and interchange geared to achieving the basic objectives of vocational education and training; concerted commitment of the protagonists helps to reduce/solve social problems and supports regional development; regional and national negotiating procedures guarantee the formation of a consensus among the players; forms of cooperation are anchored in the system; the necessary government framework is in place with freedom of action; the state defines a basic framework for vocational education, safeguards the interests of society, coordinates relevant policy issues, encourages networks, steps in where private provisions are missing, creates opportunities for all those involved to contribute in decision making, and encourages competition between providers.
- **Development of Competencies and Basic Requirements**–Systemic vocational education and training concepts allow a flexible response to changing employment patterns; training concepts comply with accepted standards, focus on both occupational skill standards and learner's personal development; teacher training is integral, part of larger education system,

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*Bertelsmann Foundation. (1999). *Vocational education and training of tomorrow.* Gutersloh, Germany: Bertelsmann Foundation.

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supports lifelong learning, encourages students to take responsibility for own learning; training and career paths are matched; regional changes and globalization of employment are taken into account.

- **Structures and Organization**–Systemic training concepts generate synergies among training opportunities available, and continuous transition from general to professional education, learners are prepared for career choice, career-advice systems are available; vertical and horizontal permeability are fundamental; development of competencies is the key to development, and provides learning opportunities in the workplace and flexible opportunities for further training.
- **Quality Development and Financing**–Transparency within the system enables people to compare vocational education and training options and forms basis for quality assurance and quality control; the state is responsible for regular public accountability; financing concepts ensure efficiency and effectiveness; a consensus has been negotiated among interests of individual, corporate sector, and society as a whole; and appropriate financing is available.

**Impact on Learning**

- Define recognized and accepted basic objectives for education and skills training.
- Design curricula to be easily adaptable to changing societal and workplace needs.
- Implement course and program review mechanisms to ensure relevancy and currency.
- Encourage learners to take responsibility for their own learning.
- Provide work-based learning and assessment opportunities.

**Implications for New Designs**

- Form partnerships with business and industry and community and governmental agencies to define standards for high quality learning and measurable assessment criteria.
- Establish networks to provide clear communication and decision-making among partners.
- Provide on-going professional development and training for staff.
- Involve career counselors to design pathways to careers and provide guidance to learners.

## *New Designs for Career and Technical Education*
## *Book Summary No. 21*

### Globalizing the Community College *

### Major Premise

During the 1990s, the community college mission shifted—from serving a local economy to a global one—and as a result, the institution took on a more corporate and businesslike approach to education, along with the use of new technologies for both instruction and work. The community college not only advances globalization, but also acts as a globalizing medium.

*This book is the result of a comprehensive study of the influences of globalization and globalizing trends on seven community colleges in the Pacific Western region of the United States and Canada.*

### Major Concepts

Globalization comprises four domains, which overlap and are interdependent:

- ***Economics***–Global economy affects state revenues and policies that in turn affect colleges through government funding alterations and policy initiatives.
- ***Culture***– Social attitudes and values from the external environment and international events are incorporated into practice. Internal populations more widely reflect international cultures.
- ***Information***–Electronic technology—its structure and management as well as the acquisition and dissemination of information—influences both the administration and instruction spheres of the college. Knowledge work replaces manual work.
- ***Politics***–Government policies play an instrumental role in the dynamics and organizational behaviors of colleges. They are clearly directing community colleges toward economic goals, emphasizing workforce training.

The most influential of the globalization forces has been economic, since community colleges have historically been dependent on revenues from students, taxpayers, and government; and government's susceptibility to globalization has meant less protection from economic forces (p. 52).

*Levin, J. (2001). *Globalizing the community college: Strategies for change in the twenty-first century.* New York: Palgrave.

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**Characteristics of Globalization**

Behaviors associated with globalization include (p. 40):

- ***Internationalization***–Immigration and recruitment of international students, administrators, and faculty; participation in international projects and meetings, and the delivery of college curriculum in other nations—on-site and through the internet.
- ***Multiculturalism***–Recognition of diversity and promotion of equality among ethnic, class, age-related, and gender-oriented groups, with more attention and responsiveness to students' cultural needs; fewer practices of discrimination; and pluralism in hiring and governance.
- ***Commodification***–Creation of services and products for the marketplace, which entails developing customized programs and delivering instruction or training to private business and industry.
- ***Homogenization***–Adjustment of products and services for similarity among institutions; standardization of practices (such as educational delivery); and the attempt to objectify the curriculum for quantification and reduction to basic elements.
- ***Marketization***–Competition with other institutions and organizations for revenues; formation of associations with private business and industry; and solicitation of donations of money, goods, and services.
- ***Restructuring***–Structural alterations to change work patterns, products, and services, usually leading to job change, job loss, and the reallocation of resources (generally motivated by scarcity of resources).
- ***Labor alterations***–Institutional changes to the nature and duration of work that modify workloads and work practices, including layoffs, more part-timers, and the hiring of lesser qualified staff for newly automated tasks.
- ***Productivity and efficiency***–Doing "more with less" by raising productivity of existing workers and reducing the work force, often resulting in accountability strategies and increased managerial control over work.
- ***Electronic communication and information***–Adoption of electronic technologies for work processes (such as registration and communication) and for education (such as online instruction).
- ***State intervention***–Increased role of the state in the affairs and operation of public institutions, including intervention, interference, and influence in college operations.

Consequences of globalization of the community college include:

- "Less emphasis on education, and more on training; less emphasis on community social needs, and more on the economic needs of business and industry; less upon individual development, and more upon work-force preparation and retraining" (p. 171).

- Information technology actually reinforced managerial hierarchies and control (p. 93). Technology increased faculty burden (p. 96), not only in the preparation and delivery of on-line courses, but also through voice mail and e-mail (p. 93). Workers are now [expected to be] available 24 hours a day (p. 15).

- As both a cost-cutting measure and reorganization, more and more administrative work was handed over to faculty, who took on roles as department chair, division chair, associate dean, and special initiative coordinators [while retaining faculty status and pay scale]. Administrators and faculty both noted a "massive increase in stress as a result of the volume of work, increased numbers of students and fewer support staff" (p.60).

- There has been a shift from innovation to survival (p. 53).

- Community colleges have lost much of their social function and gained a much more significant economic function (p.6), losing the humanistically meaningful part of their mission while attaining economic and political goals (p. *xviii*). Historical objectives of accessibility, personal and social development, and a liberal or general education seem to have lost ground (p. 100).

- A "new vocationalism" has emerged, addressing the needs of the middle class, for new-economy skills, employability skills, and applied skills (p.176). This new vocationalism will shape the institution in the 21st century just as the access and vocational mission shaped the institution in the 20th century (p. 177).

**Implications for New Designs**

- The globalization trend has already influenced the community college and will continue to do so in the 21st century. To keep to the socialization and education missions of the community college, the emphasis will need to be less on the economic domain of globalization and more on the cultural domain. This will require less attention to economic outputs and more to human development, relationships, and achievements (p. 182).

- The pressures to provide education and training to a diverse student population, to serve community economic interests, and to support institutional operations with adequate fiscal resources will no doubt increase. Institutions will be caught between the need to turn more to the private sector for funds, especially fee payers, and to preserve the traditional mission of open access—or it will expand into a higher status postsecondary institution (p. 5).

- The biggest challenge will be attention to student and community needs for a more diverse form of education, a form that is not a mere consequence of economic priorities. This includes personal enrichment programs, recreational activities, and even liberal education. Community colleges should sustain or revitalize education that informs the mind and develops the person, even in the face of global pressures—from business, industry and the state—to become globally competitive mechanisms for economic development (p. 181).

## Annotated Bibliography of Additional Resources Related to Learning Context

Imel, S. (2000). *Career and technical education in urban schools.* Columbus, OH: National Dissemination Center for Career and Technical Education. (In Brief No. 9).

Learning in urban high schools continues to be a significant challenge in the face of inadequate and deteriorating facilities, shortage of qualified teachers, low student achievement, high use of illegal substances, crime, and high dropout rates. Career and technical education is increasingly seen as an approach to change teaching and learning in urban high schools by creating small communities for learners, using contextual project-based learning, linking outcomes to standards, providing pathways to postsecondary education and further training, and building connections to the community.

Imel, S. (2000). *Welfare to work: Considerations for adult and vocational education programs* (Report No. EDO-CE-00-216). Columbus, OH: Center on Education and Training for Employment. (ERIC Document Reproduction Service No. ED440253).

The Personal Responsibility and Work Opportunity Reconciliation Act of 1996, also known as the Welfare to Work Act, emphasizes economic self-sufficiency through a "work-first" approach that moves welfare recipients into the workforce as quickly as possible (Hayes, 1999). Guidelines for career and technical educators in developing welfare-to-work programs include: develop interagency collaboration, focus on jobs available in the local job market, include both academic and career and technical education learning experiences, link education to the workplace and future education and training opportunities, and help guide future policy development to address underlying structural problems that lead to poverty and joblessness (D'Amico, 1999; Sparks, 1999).

Kerka, S. (2000). *Career and technical education: A new look.* Columbus, OH: National Dissemination Center for Career and Technical Education. (In Brief No. 8).

What has been known as vocational education for decades is changing in response to today's world of work, which demands lifelong learning, flexibility, and continuous skill upgrading. Many of the new occupations require computer technology, electronics theory, and analytical thinking. Career and technical education is but one term being used to prepare youth and adults for dual opportunities of continued education and entrance to careers through attainment of marketable skills. Contextualized learning, as part of career and technical education, offers meaningful learning to the students; thus, engages them in seeking academic success and setting career goals.

Sommers, D. (2000). *Work force information and career-technical education.* Columbus, OH: National Dissemination Center for Career and Technical Education. (In Brief No. 10).

Due to the continually changing labor market, an important piece of career and technical education is to prepare youth, their parents, and other adults with skills to find and use work force information. Recent federal legislation has formulated employment statistics systems as well as career information systems that are primarily delivered through the use of electronic delivery mechanisms. Career information is often linked with career assessment and interest inventories to guide selection of education and training opportunities. Career pathways, established at local and state levels, and career clusters identified and developed by the federal government (Office of Vocational and Adult Education) offer guidance for learners in determining career opportunities and teachers in developing curricula.

Wonacott, M.E. (2000). *Vocational education research trends* (Trends and Issues Alert No. 15). Columbus, OH: Center on Education and Training for Employment. (ERIC Document Reproduction Service No. ED440298).

Research in vocational education seeks to answer the question, "How can we best prepare youth and adults for the workplace of today?" The focus of this research varies across countries. In the United States, the emphasis of the research is on skills needed for the changing workforce. In Europe and Australia, attention is given to the impact of research on policy, decision-making, and return on investment. Methodology of the research includes quantitative, action research, critical theory, and reflective practice, and combinations of both quantitative and qualitative approaches.

Wonacott, M.E. (2000). *The workforce investment act and CTE.* Columbus, OH: National Dissemination Center for Career and Technical Education. (In Brief No. 6).

The Workforce Investment Act of 1998 focuses on five areas of outcomes: youth services, adult and dislocated worker services, governance and structure, providers and performance accountability, and individual training accounts. Youth services now must offer more than summer employment and look at long-term development and year-round programs to increase the youth's work readiness, occupation skills, and employment. Services for adults center on placing adults and dislocated workers in employment as quickly as possible and turning to education or training as a last resort. Career intervention strategies for adults remain integral to the WIA system. Governance and structure centers on State and Local Workforce Investment Boards whose membership is largely comprised of business representatives, but also includes community and technical college presidents, executives from other workforce development agencies, and labor organizations. Accountability is based on core performance indicators for youth programs and state performance levels for the postsecondary institutions.

# Design Reviews for the Learning Audience

## *New Designs for Career and Technical Education*
## *Design Review No. 22*

### Changing Face of the 21st Century Workforce*

**Definition**

The American workforce will continue to change due to tight labor markets brought about by changes in the labor supply and continued changes in worker demographics and immigration.

**Key Features** - Changes in the workplace include the following:

- Employers will recruit from previously untapped labor pools with diverse ethnic and racial backgrounds; older individuals; women; those with limited skills and experiences; and individuals with mental or physical limitations.
- Demographically, the share of whites and males in the labor force will continue to fall, while the share of female and racial minority workers will increase.
- The proportion of older workers will increase.
- The majority of immigrants will be from Asia, Mexico, and Latin America and fewer will be from Europe.
- American companies will continue to use educational attainment as a measure of high skills and knowledge.

Concerns of the workplace include the following:

- Employment gap for high-skilled workers and the increased availability of low-skilled immigrants will continue to grow.
- Bilingual education and multilingual workplaces will increase pressures for change on the educational system and on personnel policies.
- Need for health and retirement benefits for older workers will increase while the pool of younger workers contributing to Social Security shrinks.
- Work/family issues will grow with the increase in the numbers of working women.
- Comparable worth will continue to be a compensation issue.

*Hattiangadi, A. U. (1998). *The changing face of the 21st century workforce: Trends in ethnicity, race, age, and gender.* Washington, DC: Employment Policy Foundation..

This Design Review was prepared by Susan J. Wolff, Ed. D. for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

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**Impact on Learning** - Schools and colleges will need to:

- Test and improve literacy levels in native languages as well as in English.
- Provide basic skills training for those with low literacy rates.
- Link basic skills and literacy training with workplace and life skills.

- Test for knowledge and skills in ways that are accurate for those highly skilled in their own countries and cultures but are inhibited by poor English skills.
- Provide tutors and mentors in the classroom and at work sites to lessen time to be prepared for employment.
- Recognize cultural differences pertaining to the learning environment.

**Implications for New Designs**

- Use a variety of learning processes that address different learning styles and cultures.
- Integrate literacy and basic skills training with career and technical education and academic programs to provide for progression of skill attainment, employment, and career opportunities.
- Organize learning to accommodate those with cultural, time, family, and learning differences.
- Provide comfortable and safe learning environments for all learners.
- Develop assessment policies and procedures that account for cultural and life experience differences.

## *New Designs for Career and Technical Education*
## *Design Review No. 23*

### Changing Face of Community College Students*

**Definition**
The community college student population continues to change as more high school graduates are entering community colleges for their first two years of college, people with college degrees seek specialized training or new careers, older adults seek continued learning, and an increasingly diverse population seeks an education.

**Key Features**–The status of the community college population includes:

- **Education**–Highest degree earned at time of enrollment by type of program:

  Non-credit enrollment status:
  51%–high school diploma or less
  21%–certificate or associate degree
  18%–bachelor's degree
  10%–master's degree or higher

  Part-time enrollment status:
  74%–high school diploma or less
  18%–certificate or associate degree
  06%–bachelor's degree
  02%–master's degree or higher

  Full-time enrollment status:
  86%–high school diploma or less
  12%–certificate or associate degree
  02%–bachelor's degree
  0.5%–master's degree or higher

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*American Association of Community Colleges & the American College Testing Service. (2000) *Faces of the future: A portrait of America's community college students.* Preliminary Report. Washington, DC: Author.

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- **First Generation**–Characteristics of first generation students in community colleges:
  60% of community college students are first generation.
  22% of first generation students have a household income less than $20,000.
  15% of first generation students do not speak English as their primary language.

- **Older Students**–Characteristics of older students in community colleges:
  50% of those aged 29 to 59 are making a career change.
  23% of this age group are experiencing a significant life change.
  Non-credit students over the age of 40 are more likely to be taking courses for personal enrichment in comparison to the younger students taking classes for career purposes.

The top five problems of students taking community college classes are:

- Personal financial problems
- Cost of books and materials
- Job-related responsibilities
- Cost of computer
- Cost of child-care

**Impact on Learning**

- Provide for multiple learning styles.
- Provide tutoring and mentoring to enhance the learning process.
- Provide support services to the learners through the integration of instruction and career and guidance counseling.
- Provide multiple access to learning resources.

**Implications for New Designs**

- Organize learning in ways that accommodate the varying needs of the students.
- Form seamless transitions from learning levels and institutions through articulation agreements or Tech Prep.
- Seek support in terms of financial assistance for tuition, books and supplies, transportation and child care costs.

## *New Designs for Career and Technical Education*
## *Design Review No. 24*

### Changing Face of High School Students

**Definition**

Collective memories and concepts of high school as a place for preparation for further education, employment, and life no longer ring true today for many teenagers. Urban high schools in high-poverty areas often have dropout rates exceeding 50%. The *High Schools Millennium Report* (2000) prepared by leading educators, policy makers, and business people discusses changing demographics and needs of high school students. The world today is changing at unprecedented rates but high schools are resistant or slow to change to meet the needs of today's young people and the needs of society. Education is systemically linked to economic and social issues and trends; thus underlining the need to redesign the high-school experience.

**Key Features**

- Twenty-eight percent of high-school graduates complete a bachelor's degree by the time they reach ages 25-29. Of the high-school graduates that do go on to postsecondary education, 30% require a remedial course in English or algebra (U. S. Department of Commerce, Bureau of Census, 1999).
- The unemployment rate of minority youth (age 16-24) with a high school diploma was 25.7% in 1997, while the national average was 4%.
- Young families headed by a high-school dropout earned approximately $15,000 annually, compared to $26,000 for those headed by a high-school graduate, and $53,000 for those headed by a college graduate.
- Young people are socially disaffected and unconnected to the adult world, which could explain the increase in violence at the nation's high schools.
- Young people are not receiving personalized attention in the teaching and learning process, and achieve at a level less than their potential.
- Young people are dealing with changed patterns in family and work structures, a deluge of technological advancements, and a more dangerous world.
- Young people mature physically and sexually at earlier ages than previous generations.
- Only 30% of high school students are engaged in co-curricular activities.

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## Impact on Learning

- Only 42% of 8th graders are sufficiently prepared for high school raising the need for remediation.
- Students in U. S. high schools performed at one of the lowest levels of proficiency in math and science (Third International Mathematics and Science Study, U. S. Department of Education, 1998).

- U. S. 12th grade Advanced Placement calculus students placed at the international average level.
- Standards-based reform often encourages "teaching to the test" and minimizes the use of learning processes that more fully engage students in learning.
- Students feel disengaged in the learning process due to lack of meaning or relevance to their lives and therefore, do not take responsibility for their learning.

## Implications for New Designs

- Engage students in active learning processes that provide meaning and relevancy.
- Prepare young people to achieve high academic success and gain necessary work skills to contribute to their lives and the workplace.
- Create well-articulated pathways from high school to further education.
- Provide up-to-date career counseling and development that address the emerging and potential careers.
- Use technology to engage learners and enhance the learning process.
- Employ a variety of assessment tools to measure learning.

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U. S. Department of Commerce, Bureau of Census (1999). Current population survey. Washington, DC: U. S. Department of Commerce.

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## *New Designs for Career and Technical Education*
## *Design Review No. 25*

## Adult Development

### Definition

Adult development is an umbrella term for the myriad of changes (e.g., biological, psychological, and sociocultural aspects) that occur during the adult years of 18 to death. The concept of development implies not only change, but some sort of betterment or improvement, and in later years can even describe deterioration and decline of function. Bee (1996) defines adult development as not only change with age or time but "those changes that arguably reflect the emergence of some more complex or more integrated system or structure" (p. 16). Therefore, the term adult development implies that adults have achieved some level of increased adaptation, understanding and function based on life-span experiences and changes.

Traditional thought regarding adult development centered on the biological and psychological factors associated with aging and adulthood. More recently, with expansion on fundamental theories, improvements in medicine, research, and therapies, plus the introduction of newer sociocultural aspects of development, the study of adult development has been transformed into a critical area of utility and relevance. Adult development integrates theory and practice from various disciplines, such as psychology, biology, human development, and sociology, and has broad implications for adult education, workplace cultures, and human and career development.

Individuals who work with, facilitate, and guide today's adult population should be familiar with the four critical areas most relevant to understanding adult development (Merriam & Caffarella, 1999). Those areas are:

- Biological and psychological processes associated with adults and aging.
- Sociocultural contexts that cause change due to social, economic, and cohort impacts on adults.
- Cognitive development and the way adult thinking patterns are created and changed over time.
- Intelligence and aging, and the way these ideas relate to an ever-growing older population.

Design Review prepared by Laura Boehme for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

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**Key Features**

- Traditional age-stage models created the framework for adult development theory and proposed that the human life cycle followed a universal, predictable, and sequential pattern based on chronological age:
  - Jung conducted early studies on age-related aspects of adult development, personal evolution, and individuation (USDE, 1980).
  - Erikson developed the most well-known theoretical concept of age-related progression of psychosocial development that results in ego identity and integrity (Bee, 1996; Romero, 1990).
  - Havighurst linked age-appropriate psychological tasks to developmental behavior and *teachable moments* in learning (Merriam & Caffarella, 1999; Romero, 1990).
  - Levinson proposed that adult life is made up of both periods of stability and change (*Seasons of Development)* that allow for self-evaluation and readjustment (Bee, 1996).
- Later developmental phase theories, not tied to age, were proposed to better account for individual variation along the adult life course:
  - Loevinger theorized that as adults move through and complete certain stages of ego development there is increased autonomy, independence, and the capacity to appreciate others (Bee, 1996).
  - Vaillant drew on Erikson's framework in creating his idea of *Levels of Defense Mechanisms* model in which he supposes that the maturity of each adult's defense mechanisms or coping skills define their development (Bee, 1996).
  - Other developmental theorists that have originated ideas in this area on a smaller scale are Kohlberg's *Theory of Moral Development*, Roger Gould's *Theory of Personal Transformation*, and James Fowler's *Theory of Faith Development*.
- More recent non-stage/age theories and perspectives have been proposed based on change in adult roles, experience, and individuality:
  - George's *Life Course Transition* theory is a sociological view in which adult life roles, stages, and life course markers are elements that define and cause change (Bee, 1996).
  - Pearlin's theory that change is not equal to development and that the way adults cope with distress causes the diversity of pathways in adulthood (Bee, 1996).
  - Baltes's *Life Span Perspective* is a collection of theories that suppose adult development is influenced by a variety of factors related to age, culture, history, environment, and personal experience. He postulates ideas regarding *plasticity*—that all humans are capable of change, and that there is a *lawfulness* to changes that occur in adulthood, although each person may take a different route to improvement or decline (Bee, 1996).
  - Perun and Bielby's *Timing Model of Adult Development* states that adulthood is made up of "temporal progressions" that follow some distinct timetable related to each adult. The progressions are interrelated and either synchronous or asynchronous, which serve to create stability or change in the individual. Resolving asynchronous progressions can lead to higher efficacy and development (Bee, 1996).
- Other significant factors to consider in adult development theory:
  - Adult development models do not readily explain the functioning or perspectives of women and minorities (Kerka, 1992). These models have primarily been based on the experiences of white males. For example, in Erikson's model, intimacy is a result of gaining identity, with intimacy being independent of relationships. For women, according to Bee (1996) and Gilligan (1982), identity tends to be created as a result of their relationships and is interdependent with identity. Bee (1996) goes on to say that many women may even reverse the tasks of intimacy and identity. For minorities, typical adulthood transitions and changes may not be congruent with age/developmental theories due to cultural, historical, environmental, and educational experiences and

opportunities (Bee, 1996).

- Adulthood has common, recurring themes that can be explained through adult development principles (Bee, 1996): (a) A sense of continuity/stability vs. a sense of change exists for every adult throughout the life span; (b) The occurrence of episodes are based on biological, psychological, and sociocultural factors and phenomenon; (c) Each individual has their own *linear* (sequential progressions) or *cyclical* (circle of patterns) view of life that serves to create identity and purpose (Lankard, 1993); (d) Change may be caused by internal or external forces and each individual's ability to adapt defines the outcome; (e) Those individuals who deviate from typical adulthood experiences related to biological, social, cohort/era, and non-shared events will have more unusual patterns of development than those who follow norms (Bee, 1996).

**Impact on Learning**

To meet the needs of adult learners, it is critical for adult educators and career counselors to understand adult development theory and its practice. Merriam and Caffarrella (1999, p. 391) state, "Adults are most often motivated to learn due to some change or developmental issue." According to Beatty and Wolf (1996) and Merriam and Caffarella (1999), adult learning applications, based upon adult development theories include the following:

- Learning is a process involving multiple personal changes.
- Individual needs, emotions, and approaches to learning shape the learning experience.
- Learners actively construct and create meaning from learning.
- Life experience is a foundation and resource for all learning.
- Personal and social contexts affect learning.
- Learning must have some element of reflection.
- Safety, support, and recognition is valued in the learning environment.
- Learner-centered models create productive, outcome-based results.
- Learners desire more cooperative, collaborative, and team-oriented tasks.
- Practical application promotes and validates learning experience.
- Informal contexts are where most learning occurs.
- Diversity, political, and economic conditions shape learning experience.

Integrating the learner, context, and learning/developmental processes makes the learning reflective and adaptive for each adult (Merriam & Caffarella, 1999). Whitbourne and Weinstock (1986) suggest that implementation of adult development and learning strategies should be designed to relate to the personal, career, and educational contexts of adulthood, which are characterized by: (a) periods of change and stability; (b) variations in adult developmental/educational maturity and experiences; and (c) the continual process of defining, redefining, and creating self-identity.

**Implications for New Designs**

Using knowledge of adult developmental differences promotes and supports new perspectives on adult education and career development (Merriam & Caffarella, 1999; McClary, 1990; Naylor, 1985; Kerka, 1993). Implications for applying adult development theories to New Designs are:

- Re-design course content to include various perspectives, social action, and validation of experience.
- Use learning environment arrangements that promote learner-centered cooperation and collaboration.
- Focus on diversity and differences in women and minority cultures' behavior, identity, and life patterns.
- Address utility of program planning concerns such as program objectives, target audience,

delivery system, program content, and support services.

- Provide and support opportunities for adults to self-assess, make decisions, problem solve, create relationships, think critically, reflect on learning, plan leisure time, and pursue spirituality.
- Incorporate technological and administrative innovations to allow for more flexibility at work, in job training, in educational setting, and at home, to balance the demands of adult life and reduce stress.
- Create individualized programming and learning contracts for greater adaptability, accountability, and control by the adult.
- Apply instructional and training techniques that encourage experiential learning, portfolios, and self-pacing.
- Encourage adult educators to take on the role of resource person, coach, and mentor instead of authority.

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## *New Designs for Career and Technical Education*
## *Design Review No. 26*

## Adolescent Development

### Definition

Much research has contributed to contemporary theories and definitions of adolescent development. Early theorists Piaget, Erickson, and Kohlberg defined adolescence in distinct ways (Medline Plus, 2001): (1) Piaget's theory stated that adolescents go through a stage of formal operations reaching the ability to comprehend purely abstract content such as higher mathematics concepts and philosophy. (2) Erickson's research posed that humans go through eight stages of psychosocial development with each stage having a crisis and unique development. During the adolescent stage, Erickson identified two tasks that are undertaken—"identity vs. role diffusion" and "intimacy vs. isolation." This is the time to explore different identities, roles, and challenges. (3) Kohlberg's moral development theory states that morality is neither universal nor logical, but comes from the process of thinking and occurs in six stages. Adolescence falls in the fourth and fifth stages of a societal maintenance orientation (keeping law and order) and social contract (laws that are wrong can be changed).

Gilligan (1991) presents a theory of moral development that claims women tend to think and speak in different ways than men when confronted with ethical dilemmas and that these gender identity differences are grounded in early childhood and experiences. Since distinctions of identity shape the selection of moral perspective, the link between gender and moral judgment is particularly strong in the teenage years when young men and women are highly self-conscious. According to Gilligan (1991) justice is the ultimate moral maturity for adolescents (usually male) who see themselves as autonomous, and care is the ultimate responsibility of adolescents (usually female) who see themselves linked to others.

Recent studies in adolescence have focused less on a general theory of normative adolescence and have begun to include contextual influences on development, diverse populations, and behavioral genetics (Steinberg, 2001). Looking at adolescence in a more active way, teens experience a set of changes and work toward completing normative tasks.

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## Key Features

Ingersoll (2002) described Havighurst's stages of adolescent development and transition from childhood to adulthood as a time that the adolescent must:

- Adjust to a new physical self.
- Adjust to new intellectual abilities.
- Adjust to increased cognitive demands at school.
- Develop verbal skills.
- Develop a personal sense of identity.
- Establish adult vocational skills.
- Establish emotional and psychological independence from her or his parents.
- Develop stable and productive peer relationships.
- Learn to manage her or his sexuality.
- Adopt a personal value system.
- Develop increased impulse control and behavioral maturity.

### General Stages of Adolescent Development

- Physical, social and emotional, and cognitive are three domains typically used to describe development. Adolescents experience changes in these three areas, in three distinct stages found below.

### Early adolescence (12-14 years)

- Move towards independence and a struggle with sense of identity. Adolescents begin to have a realization that parents are not perfect and search for new people to love in addition to their parents (ADOL, 1996).
- Begin to develop advanced reasoning skills, abstract thought, and meta-cognition.
- Begin maturation into puberty shown by rapid gains in height and weight and cognitive and emotional changes (Hueber, 2000).
- Start testing limits, occasionally experiment with cigarettes and alcohol (ADOL, 1996), have a greater interest in privacy, and worry about being normal.

### Middle adolescence (15-17 years)

- Move towards independence, self-involvement, and complaints of parents' interference with their independence. Strong emphasis on peer groups with the group identity of selectivity, superiority, and competitiveness (ADOL, 1996).
- Begin to develop ideals and selection of role models, more consistent evidence of conscience, a greater capacity for setting goals, and an interest in moral reasoning (ADOL, 1996).

### Late adolescence (17-19 years)

- Establish a firmer identity, ability to delay gratification, and think ideas through. Capable of useful insight, stress on personal dignity and self-esteem, acceptance of social institutions, and cultural traditions (ADOL, 1996).

Psychologists and teachers are looking in new ways at how adolescents develop. One current trend, although not new, is studying adolescents through context rather than looking at adolescence through the lens of age-stage development. Garbarino (NCSCE, 2001), views development from an ecological perspective and feels that interactions between adolescents and developmental components (peers, family, school, and community) have a great deal to do with how they develop. Experiences based upon these interactions could impact the process of development and have implications throughout the teen's life span.

## Impact on Learning

Understanding of adolescent development theory assists educators in planning and implementing meaningful learning activities. Knowing that students: (a) come from various contexts, which affects their understanding and ways of learning; (b) have a need for independence and growing autonomy; and (c) are developing advanced cognitive skills, indicates that different approaches to learning should be offered:

- Bringing different domains of context into learning activities connects the learning and usefulness of the information or materials.
- Using project-based learning that incorporates situational problems and includes family, peers, community, and work to enhance reasoning skills, increases motivation and aids the development process for teens.
- Creating learning opportunities appropriate to a variety of developmental needs meets the needs of all students.
- Allowing more autonomy and decision making in the learning process results in better cognitive reasoning and increases motivation (Graber, 1996).
- Designing learning activities that increase cognitive skills, advanced reasoning, and the ability for abstract thought and meta-cognition assists teens in seeing the world in a new way.
- Increasing positive learner-teacher relationships occurs through understanding of adolescent development theory (Graber, 1996).
- Providing an academic culture that stresses task improvement and mastery utilizes emerging cognitive skills.

## Implications for New Designs

- Eliminate traditional boundaries and compartmentalized content by integrating content and using practical, problem-based learning based upon a cognitive teaching perspective rather than focusing solely on developing technical skills (Brown, 1980). This perspective emphasizes a holistic understanding of contemporary society and development of critical thinking, cooperative problem solving, and practical reasoning (Brown, 1980).
- Incorporate dialogue between peers and community members and teach research skills to students by addressing practical problems within an adolescent's context.
- Teach lessons through a practical problem approach to help adolescents develop an understanding of a problem from all perspectives as well as assist them to develop meaning of the problem in their own context and empower them to take action to solve their problems. This provides practice and motivation for learners to apply these skills to real life situations.
- Strengthen adolescent development by providing learning that increases cognitive functioning, advanced reasoning, and critical thinking within the context of their lives and as members of society (Southers, 1996).
- Incorporate technical means and action, communicative action, and emancipative action into lessons to increase development of skills that help adolescents' understanding of social consequences, as members of a society seeking a common good (Southers, 1996).

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## *New Designs for Career and Technical Education*
## *Design Review No. 27*

### Voices of Diversity*

**Definition**
Views of educational reform efforts linking education and work and determining ways to create a school climate conducive to learning were studied in a national longitudinal study, conducted from 1993 to 1996, of learners in nine secondary and postsecondary programs and resulting in the following diverse findings.

**Key Features**–of the study include:

- **Views of Current Educational Reform**
  - Academic and vocational education connections resulted in the valued features: (a) connecting theory and authentic learning, (b) connecting learning across the curricula, and (c) connecting teaching and learning to students' personal interests.
  - Secondary and postsecondary connections resulted in the valued features: (a) career guidance and exploration grounded in authentic learning experiences, and (b) facilitating the transition to further education.
  - Education and work connections resulted in the valued features: (a) improved career development through integration of education and work, and (b) learning new and transferable skills.

- **Building a School Climate Conducive to Learning**
  - Authentic program context provided opportunity to: (a) explore career opportunities in broad fields, (b) participate in a variety of courses linking education and work, and (c) ground academic content and career aspirations in authentic experiences both in and out of the classroom.

*Herdanez, V. M., & Phelps, L. A. (1996). *Voices of diversity (Briefs No. 2 and 3)*. Berkeley, CA: National Center for Research in Vocational Education.

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- Supportive environment provided opportunity to experience: (a) individualize school-based and work-based encouragement and support by teachers, counselors, peers, and worksite mentors; (b) support services provided in environment that are safe and respectful of students' diverse backgrounds; (c) support from local business and industry to enhance the work-based component.
- Teaching and learning context provided opportunity to: (a) address high academic standards, (b) be challenged by demanding workload, and (c) experience in-depth instruction and learning.

**Impact on Learning**

- Become focused on the needs of diverse learners and learning processes.
- Integrate academics, career and technical education, and work-based learning.
- Provide learning experiences that are relevant and meaningful to learner from a diversity of backgrounds and perspectives.
- Design authentic assessments.
- Provide bridge to further education and the work, family, and community roles and responsibilities.

**Implications for New Designs**

- Develop curriculum and activities in the context of preparing diverse learners for next steps.
- Recognize the needs of a diverse learning audience.
- Connect learners with one another, the community, and other resources.
- Provide support services for learners that are sensitive to all aspects of diversity.
- Provide faculty and staff development opportunities to stay current with educational reform efforts and requirements and to learn effective teaching strategies to meet performance measures and the needs of a diverse group of learners.

## *New Designs for Career and Technical Education*
## *Design Review No. 28*

### Contract Education/Customized Training

**Definition**

Contract Education can be defined as customized education, training, and other services provided through fee-based, contractual agreements between a community/technical college and private or public organizations within the community. These services vary across a wide range of activities such as: (a) for-credit and not-for-credit education or training activities, (b) in-service training/retraining of corporate employees, (c) union apprenticeship training, (d) Workforce Investment Act programs, and (e) professional consulting services. Contract education programs can be managed and directed in ways that support the academic, vocational/occupational, remedial, and community functions that have been associated with the traditionally comprehensive community college mission.

**Key Features**

Major characteristics of contract education, according to Dougherty and Bakia (2000, p. 200) are:

- An outside group such as a firm, industry association, or government agency contracts for specific programs or course.
- The contractor is conceived of as the main client for the training. Students are secondary clients.
- Community colleges receive payments from the contractor and/or public agencies providing third party payments.
- The contract determines who will receive the contracted training.
- The contractor has a significant or determinative voice in framing the content of the training.
- The contractor has a significant or determinative voice in defining measures of success.
- The contracted programs are usually, but not always, customized to the contractor's requirements in some fashion.

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## Impact on Learning

- In contrast to regular degree or certificate programs offered on community/technical college campuses, contract education services are typically oriented towards in-service constituencies (i.e., personnel who are already employed but who receive additional specialized skills training from their employers).
- Instruction and training are focused on specific and/or highly specialized learning outcomes relating to downstream workforce development needs of private or public employers.
- Course work or training activities are often conducted at the work-site itself or at a nearby locale that provides the employee with reduced travel requirements.
- Learners may take some or all of their training at specifically designed and staffed training centers that emulate the workplace.
- Curriculum for contracted services is commonly based upon credit courses (e.g., English language skills courses and other traditional general education subject matter) offered on the campus and redesigned to fit the workplace application.
- Contract education makes it possible for contractors to acquire all levels of education and training provided by the college; however, most contract education programs or centers focus on workforce and occupational training.

## Implications For New Designs

- Design, organization, and delivery of non-credit subject matter can often be done in a more creative format when developing and implementing contract education or training services.
- Contract education programs can provide an additional revenue stream for community/technical colleges, and in some states community colleges are allowed to retain a significant portion of funds generated beyond direct operational expenses. However, contract education programs are as vulnerable to the negative rhythms of the marketplace as the industries they serve.
- Customized training requires high levels of coordination between campus departments and the contract education program to provide a variety of benefits to the contractor (e.g., the opportunity for students to engage in learning outside the normal delivery constraints of for-credit courses and programs).
- Contract education programs figure significantly in the efforts of community colleges to work collaboratively with both public and private interests within their communities. The programs provide employers with high quality training resources that are usually competitively priced. The community college benefits from this kind of collaboration with additional revenues, students, and political clout in the community.
- In-service education and training are often associated with contract education; however, pre-service or entry-level employment are routinely developed for businesses, state and local governments, and unions through contract education.
- Clients are drawn to contract education services at a community college because of the tendency to be more economical than private-sector competitors. College contract training program also receive high marks for the types of education and training services they offer, the overall quality of those services, and their general responsiveness to the needs of clients.
- The success of contract education and training services is significantly impacted by the degree to which their results can be measured against predetermined criteria established by the contractor. This tends to create a higher level for direct accountability than is applied to the more programmatic degree-based curriculum offered on the community college campus.
- Contract education programs must be staffed with a core of high-quality, full-time personnel (Barber, Klein-Collins, & Pacelli, 1998, p. 14) to meet the standards of the businesses and public institutions they serve. Additionally, program leadership needs to be well aligned with

the entrepreneurial character of contract education, but also be sensitive to the broader mission of the community college.

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Knowledge workers can analyze, synthesize, and evaluate information to solve problems and typically, these people are highly educated, creative, computer literate, and have portable skills. Through their skills, knowledge workers convert ideas into products, services, or processes by working collaboratively with and learning from others.

Wonacott, M.E. (2000). *Preparing limited English proficient persons for the workplace* (Report No. EDO-CE-00-215). Columbus, OH: Center for Education and Training for Employment. (ERIC Document Reproduction Service No. ED440252).

Limited English proficient persons come from a variety of social, economic, and educational backgrounds and have varying levels of literacy in their own languages as well as in English. Educators and trainers need to recognize cultural differences as well as language differences. Cultural factors to consider include roles of learners and teachers, gender-related issues, appropriate topics for instruction, and appropriate behavior at learning institutions. Programs to prepare speakers of other languages range from: English as a Second Language that provides survival and pre-workplace language skills; Vocational English as a Second Language, that focuses on specific occupations; and Workplace Literacy programs that upgrade English language reading and writing skills.

## Design Reviews for the Learning Signature

## *New Designs for Career and Technical Education*
## *Design Review No. 29*

### New Vocationalism*

### Definition

The National Center for Research in Vocational Education, headquartered at the University of California, Berkeley envisioned "emerging vocationalism" as having the features described below:

### Key Features

- **Broader Education**–Emphasis on broader education .
- **Careers**–Focus on "careers" as opposed to "jobs".
- **Variety of Learning Settings**–Need to draw from a variety of settings recognizing their influence on occupationally oriented capacities.
- **Concern for Transitions**–Concern about the transition between different types of settings.
- **All Students**–Need to include all students as opposed to focusing on selected groups.
- **Equity and Access**–Revised conception of equity and access to and completion of programs.
- **All Teachers**–Focus on both vocational and academic teachers.
- **Grounded Instruction**–Pedagogical methods and content grounded in the realities of employment.
- **Accountability**–Mechanisms of accountability to influence the content of programs.
- **Both Employers and Schools Must Change**–Acknowledgement that how employers operate must change as much as how occupationally oriented education functions.

### Impact on Learning

- Provide quality career counseling and guidance to assist learners with preparation for careers.
- Teach learners how to take responsibility for their own learning and recognize the need for lifelong learning to enter new careers.

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*National Center for Research in Vocational Education. (1993). *The 1993 agenda for the national center for research in vocational education.* Berkeley, CA: National Center for Research in Vocational Education. (As presented in *Voices of Diversity, Brief No. 3*, Fall, 1996, NCRVE.)

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- Develop learning strategies that support all learners and their expectations.
- Design curricula and programs that teach workplace skills as well as content and job skills.

**Implications for New Designs**

- Develop a system of learning that includes employers and community members to ensure programs and courses are preparing learners adequately and that business and industry hiring processes and career opportunities are aligned with educational efforts.
- Design accountability measures for programs, faculty, staff, and the learners.
- Promote integration of academic and career and technical education programs, faculty, and learners.

## *New Designs for Career and Technical Education*

## *Design Review No. 30*

### Vision of National Research and Dissemination Centers for Career and Technical Education*

### Definition

The vision of the National Research and Dissemination Centers for Career and Technical Education focuses on educating about, through, and for careers as an integral component of public education. The work accomplished through the Centers, primarily research, will significantly affect the quality of knowledge and understanding necessary to advance career and technical education in the United States. The Centers vision calls for removal of barriers that prevent access to career and technical education for all students and making career and technical education a part of the curriculum from the earliest stages of schooling.

### Key Features

The National Research and Dissemination Centers for Career and Technical Education see career and technical education as framed by two vectors:

1. **A New Workplace**–Where the emphasis in on customization and flexibility and where work and skills are forever changing and preparation for jobs requires perpetual renewal.
2. **Students as Multifaceted**–Career and technical education is expansive, viewing students, whether in the K-12 system or in postsecondary systems, not just in terms of the economic aspects of their lives, but as multifaceted human beings.

The vision of the Center plays out in viewing career and technical education as:

- **Education Through Work**–Learning all school/college subject with work as a context.
- **Education About Work**–Knowledge of the world of work is part of the general education needed by all students.
- **Education For Work**–Direct preparation for jobs.

*National Research Center for Career and Technical Education. (1999). *Proposal for national center for research in career and technical education.* St. Paul, MN: University of Minnesota.

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## Impact on Learning

- Use research findings and identified best practices to inform the development of curricula, programs, teaching practices, and assessment of learning.
- Use technology to provide links to resources, including other learners and teaching staff, researchers, community and business members, and databases of information to enhance learning experiences.

## Implications for New Designs

- Use research findings and identified best practices to guide the design of career and technical education in terms of context, audience, signature, expectations, process, organization, partnerships, staffing, environment, accountability, celebration, and finance.
- Access discussion groups and participate in professional development opportunities provided by the Centers.
- Stay current with promising practices and exemplary sites to develop models for own institution and programs.

## *New Designs for Career and Technical Education*
## *Design Review No. 31*

### Vision of High School Career and Technical Education for 21st Century*

### Definition

According to Lynch (n.d.) the purposes of high school career and technical education should be to: (a) provide career exploration and planning, (b) enhance academic achievement and motivation to learn more, (c) acquire generic work competencies and skills useful for employment, and (d) establish pathways for continuing education and lifelong leaning.

### Key Features

The four **framing themes** found in the literature for career and technical education in the high school include:

- Need to infuse career planning throughout the entire curriculum, pre-K through lifelong learning.
- Need to ground career and technical programs in high school reform.
- Need to upgrade and improve the image of vocational education.
- High school graduates must be prepared both for the workplace and continuing education.

The **components** of career and technical education in the high school should include:

- High school majors–Majors would have similar meaning to those used in colleges and integrate all learning experience across subjects and places of leaning.
- Teaching and learning–Must address change in knowledge base, emerging knowledge on the learning process, and professional development for teachers.
- Work-based learning–Integrate the use of the workplace as place to learn.
- Authentic assessment–Assessment should reflect appropriate achievement expectations and serve instructional purposes.

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*Lynch, R.L. *A vision of high school career and technical education for the 21st century.* Unpublished paper prepared while on assignment to the federal Department of Education, July 8, 1998 to June 30, 1999.

This Design Review was prepared by George H. Copa, Ph. D. for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

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- Career academies–Transform programs to the career academy format.
- Tech-prep–Reflect closer collaboration between secondary and postsecondary education.

**Impact on Learning**

- Integrate career planning into the curriculum.
- Prepare students for lifelong learning and to take responsibility for their own learning.
- Utilize work-based learning opportunities to teach workplace skills that can transfer from one career to another.
- Develop high standards for all learning and use authentic assessments to measure performance.

**Implications for New Designs**

- Include career and technical education in total education reform efforts.
- Organize learning in ways that support collaborative efforts with partners and to provide options for learners to achieve their learning goals.
- Develop partnerships with community and business members and with other educational institutions to provide multiple options for learners to engage in career and technical education learning experiences.

# *New Designs for Career and Technical Education*
## *Design Review No. 32*

## Purposes of Vocational Education in Secondary Schools*

### Definition

A qualitative study to identify the purposes of vocational education in secondary schools in Minnesota that were guiding practice revealed the following features.

### Key Features

- **Building competence**–The three types of competence are: (a) skill competence, the realization that "I can do it;" (b) personal competence, the sense that "I feel good about myself;" and (c) contextual competence, the insight that "I know how and where I can fit in the world."
- **Applying the basics to and from**–Application, the bridge from students' knowing to students' doing, is an integral part of vocational education. It also involves using knowledge learned in one course to what is being learned in other courses.
- **Thinking through problems**–Vocational education has a unique orientation within secondary schools. Its focus is practical, with consideration for action to improve real problem situations.
- **Learning technical skills**–Technical learning involves learning concepts and, through practice, becoming adept in their use.
- **Exploring life roles**-One of the purposes of vocational education is to allow students to explore life roles, in order that they may make informed family and career decisions. Exploration takes place in two phases: Searching and scrutiny.
- **Learning to work together**–Learning to work together occurs for several reasons: (a) students are faced with conflicts and tensions in working together, and they need to work out disagreements and correct problems, (b) students must meet deadlines and learn to cooperate to do so, and (c) students are placed in situations in which they have to interact with others with differing skills and abilities.

*Copa, G. H., Plihal, J., School, S., Ernst, L., Rehm, M., & Copa, P. M. (1985). *An untold story: Purposes of vocational education in secondary schools.* St. Paul, MN: Minnesota Research and Development Center for Vocational Education, University of Minnesota.

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- **Expressing self**–In vocational classes, aesthetic pleasures are evident in students' expression of emotion; their participation, achievement, and pride; their creativity; and their development as critics of the quality of work.
- **Extending self to community**–Vocational education extends itself to community in the following ways: (a) people involved with vocational education actively strive to meet community needs, and (b) vocational education contributes directly and frequently to school well-being by the services it provides to schools.
- **Going on stage with life roles**–"Going on stage" is the public presentation of students' ideas and skills learned in vocational education.

## Impact on Learning

- Design learning experiences in a manner that prepares learners for work, family, and community roles and enhances sense of self-worth.
- Incorporate opportunities for learners to practice and present new skills.
- Incorporate appropriate use of technology in all curriculum.

## Implications for New Designs

- Advocate for career and technical education to be a part of all learning.
- Develop partnerships and links with business and community members to provide learning opportunities outside of the classroom and involve the business and community members in learning experiences that occur at the school or college.
- Design authentic assessment processes that demonstrate learning and becomes a model for determining performance measures.

## *New Designs for Career and Technical Education*
## *Design Review No. 33*

### Framework for Content of Vocational Education*

**Definition**

The meaning of vocational education is ***education directed toward enhancing the vocation development characteristic of an educated person***. Some salient implications of this view of vocational education are, for example, that it should be viewed as an alliance of processes that includes training. Vocational education should be guided by ethical, aesthetic, and technical considerations if it is to be most effective. The ultimate aim of vocational education is a fully educated person, particularly from a vocational development perspective. Currently, ***work and family life roles and responsibilities form the essential aspects of vocational life*** and should, therefore, be the focus of vocational education (Copa, 1992).

**Key Features**

- In the context of vocational education, work responsibilities refer to a grouping of terms including job, occupation, employment, career, work, and calling or vocation. Family is a social organization of individuals who a unit living together in one household. Family responsibilities refer to parents, children, extended family members, and other forms of co-habitation.

- Vocational education focuses on the vocational development of an educated person. Vocational development is a major component of human development. Other components of human development include spiritual, physical, social, and personal development; these other components that can have a bearing on vocational development and vice versa. The areas of development overlap and intersect, calling for an integration of learning experience designed to enhance learning among the areas.

*Copa, G. H. (1992). *A framework for the subject matter of vocational education.* Berkeley, CA: National Center for Research in Vocational Education, University of California.

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- ***Vocational education is a lifelong process of developing the capacity (i.e., caring, competence, confidence) for assuming vocational responsibilities.*** Vocational responsibilities are the expectations for accomplishment in social and economic roles in which individuals take responsibility to provide services and produce products of value to themselves and others. Full realization of human potential is critical to the social and economic progress of nations and the world. A vocational developmental perspective includes attention to both short-term and long-term needs. Vocational responsibilities include responsibility for being reflective and active in changing work and family environments to enhance their effectiveness in fully realizing human potential.

- ***Learning that enhances vocational development takes place in a variety of settings, including family, school, work, and community settings. The degree to which an educational experience is directed toward vocational responsibilities can vary from general to specific, tangential to central.*** In some sense, all learning leads to vocational development. However, for the educational experiences typically labeled professional, technical, occupational, and vocational education, the directedness toward vocational responsibilities is central and specific.

- Since vocational development is a component of human development, vocational education should be part of everyone's education. Some aspects of vocational education would be the same for all individuals; at the more specialized levels, the content would vary in accordance with the vocational responsibilities that are of interest to the individual.

**Impact on Learning**

- Include notion of preparing learners for work, family, community, and personal roles and responsibilities in curriculum and programs.
- Design learning activities to occur in settings and ways that resemble what learners will experience when entering the workforce and community life.
- Educate the whole person.
- Integrate vocational education with academic areas to provide understanding of how areas of development and learning overlap.

**Implications for New Designs**

- Provide appropriate context of learning to show need for integrating vocational and academic education.
- Promote understanding with teachers, faculty, staff, and parents that vocational education prepares people for all of life, not just the workplace.

## *New Designs for Career and Technical Education*
## *Design Review No. 34*

### Linking Organizational Identity and Signature*

### Definition

Wheatley and Kellner-Rogers (1996) are particularly insightful on the crucial role that learning signature, as identity, plays in institutional design in a context of need for change and transformation. One of their guiding principles for thinking about how to organize human activities is:

> *Life organizes around identity.* Every living thing acts to develop and preserve itself. Identity is the filter that every organism or system uses to make sense of the world. New information, new relationships, changing environment—all are interpreted through a sense of self. This tendency toward self-creation is so strong that it creates a seeming paradox. An organism will change to maintain identity. (p. 14)

### Key Features

They go on to describe identity (signature) as the "most compelling organizing energy available" (p. 58). In questioning how to think about organizational identity, they suggest:

- In organizations, as in people, identity has many dimensions. Each illustrates some aspect of who the organization is. Identity includes such dimensions as history, values, actions, core beliefs, competencies, principles, purpose, and mission. None of these alone tells who the organization is. Some are statements about who it would like to be. Some are revealing of who it really is. But together they tell the story of self and its sojourn in a world it has created.

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*Wheatley, M. J., & Kellner-Rogers, M. (1996). *A simpler way.* San Francisco: Berrett-Koeler. (As cited in Copa, G. H., & Ammentorp (1998). *New designs for the two-year institution of higher education, final report.* Berkeley, CA: National Center for Research in Vocational Education, University of California.

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- Identity is this source of organization. Every organization is an identity in motion, moving through the world, trying to make a difference. Therefore, the most important work we can do at the beginning of an organizing effort is to engage one another in exploring our purpose. We need to explore why we have come together. (p. 58)

These remarks reinforce the need for attention to learning signature very early in the design process, for the learning signature provides a way of bringing coherence and alignment to the rest of the design. They clarify this point:

- We can't resolve organizational incoherence with training programs about values, or with beautiful reports that explain the company's way, or by the charisma of any leader. We can resolve it only with coherence—fundamental integrity about who we are.

- With coherence, comes the capacity to create organizations that are both free and effective. They are effective because they support people's abilities to self-organize. They are free because they know who they are. (p. 60)

- They conclude with a compelling reason for attention to learning signature as an early and significant design element, "In organizations, clear identity is an unmistakable and certain call" (p. 61).

**Impact on Learning**

- Allow for learner involvement in the development of a course or program and be willing to let things emerge.
- Incorporate continuous quality improvement processes to ensure learners' expectations are being met and that the learning has high standards and measurable performance measures.
- Provide coherence to the learning process and link the process to an overall framework.

**Implications for New Designs**

- Identify signature early in a planning process to be used as the focal point of why things are done within the organization.
- Organize learning in ways that allow of self-organizing processes to emerge, develop, and function.
- Provide leadership in a strong way, but allow for the uniqueness of the organization to emerge and to embrace a continually evolving structure.
- Provide training opportunities to create an understanding of self-organization.
- Develop accountability measures that are linked to the signature.

# Design Reviews for the Learning Expectations

## *New Designs for Career and Technical Education*
## *Design Review No. 35*

### National Education Goals*

### Definition

The national 1989 Education Summit led to the adoption by the U. S. Congress of six, later expanded to eight, National Education Goals for the Year 2000.

### Key Features

The established goals and their features are as follows:

- **Goal 1: Ready to Learn**–All children in America will start school ready to learn. The goal is that all children will have access to needed nutrition, physical activities, and health care; that their parents or other significant adults in their lives are providing support for learning; and that all children will have access to pre-school programs in order to be better prepared to learn.
- **Goal 2: School Completion**–The high school graduation rate will increase to at least 90% and the retention and completion rate gaps between non-minority and minorities will be eliminated.
- **Goal 3: Student Achievement and Citizenship**–All students will leave grades 4, 8, and 12 having demonstrated competency over challenging subject matter, including English, mathematics, science, foreign languages, civics and government, economics, arts, history, and geography. Every school in America will ensure that all students learn to use their minds well, so they may be prepared for responsible citizenship, further learning, and productive employment in our Nation's modern economy.
- **Goal 4: Teacher Education and Professional Development**–The Nation's teaching force will have access to programs for the continued improvement of their professional skills and the opportunity to achieve the knowledge and skills needed to instruct and prepare all American students for the next century.

*National Education Goals Panel. (1999). *The national education goals report: Building a nation of learners, 1999.* Washington, DC: National Education Goals Panel.
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- **Goal 5: Mathematics and Science**–United States students will be the first in the world in mathematics and science by focusing on preparing and hiring well educated mathematics and science teachers. The number of undergraduate and graduate students, especially female and minorities, who attain degrees in mathematics, science, and engineering will increase significantly.
- **Goal 6: Adult Literacy and Lifelong Learning**–Every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship. Every adult American will have access to gain skills in the use of technology. The numbers of learners who enter college and complete two- or four-year degrees will increase substantially. Lifelong learning and mid-career change opportunities will increase.
- **Goal 7: Safe, Disciplined, and Alcohol- and Drug-free Schools**–Every school in the United States will be free of drugs, violence, and the unauthorized presence of firearms and alcohol and will offer a disciplined environment conducive to learning. Parents, businesses, governmental agencies, and community organizations will work together to reach this goal.
- **Goal 8: Parental Participation**–Every school will promote partnerships that will increase parental involvement and participation in promoting the social, emotional, and academic growth of children.

**Impact on Learning**

- Provide additional opportunities for learners in attaining their educational goals (e.g., summer school, after-school programs, and other educational activities) linked with high quality teaching and assistance.
- Seek assistance from the community and parents in reaching identified high standards.
- Use multiple measures to link student assessments to standards.

**Implications for New Designs**–Based upon the findings of four regional meetings centered on the National Education Goals, those implementing New Designs for Career and Technical Education Programs should pay attention to the following:

- Provide or ensure that training is available and accessible to prepare strong educational leaders at all levels.
- Partner with higher education institutions to improve professional development for pre-service teacher education, initial teacher licensure and certification, and state support of professional development. Educators also need to have opportunities to do in-depth study in the areas of subject matter, pedagogy, and working with diverse populations.
- Prepare teachers and administrators to seek and use data, including that from student assessments and community outreach, to guide decisions on policy, practice, and resource allocation. Local business partners can often provide needed information and analysis.
- Stay the course with successful education reform efforts to provide continuity across states and regions.

## *New Designs for Career and Technical Education*
## *Design Review No. 36*

### What Adults Need to Know*

### Definition

"In the early part of the twentieth century, education focused on the acquisition of literacy skills: reading, writing, and calculating. It was not the general rule for educational systems to train people to think and read critically, to express themselves critically, to express themselves clearly and persuasively, to solve complex problems in science and mathematics. Now, at the end of the century, those aspects of high literacy are required of almost everyone in order to negotiate successfully the complexities of contemporary life" (Stein, 2000, p. 1). The National Institute for Literacy developed *Equipped for the Future Content Standards* for adult literacy and lifelong learning to address the skills needed for all aspects of life in the 21st century.

### Key Features

The roles and responsibilities that adults need to be able to do competently as identified in the *Equipped for the Future Content Standards* are as follows:

- **Citizen/community member role map**–Effective citizens and community members take informed action to make a positive difference in their lives, communities, and world:
    - Become and stay informed.
    - Form and express opinions and ideas.
    - Work together.
    - Take action to strengthen communities.

- **Parent/family member role map**–effective family members contribute to building and maintaining a strong family system that promotes growth and development:
    - Promote family members' growth and development.
    - Meet family needs and responsibilities.
    - Strengthen the family system.

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*Stein, S. (2000). *Equipped for the future content standards: What adults need to know.* Washington, DC: National Institute for Literacy.

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- **Worker role map**–effective workers adapt to change and actively participate in meeting the demands of a changing workplace in a changing world:
    - Do the work.
    - Work with others.
    - Work within the big picture.
    - Plan and direct personal and professional growth.

The content standards for adult literacy to be able to carry out the roles and responsibilities as workers, parents and family members, and citizens and community members are as follows:

- **Communication Skills**
    - Read with understanding
    - Convey ideas in writing
    - Speak so others can understand
    - Listen actively
    - Observe critically

- **Decision-making Skills**
    - Solve problems and make decisions
    - Plan
    - Use math to solve problems and communicate

- **Interpersonal Skills**
    - Cooperate with others
    - Guide others
    - Advocate and influence
    - Resolve conflict and negotiate

- **Lifelong Learning Skills**
    - Take responsibility for learning
    - Learn through research
    - Reflect and evaluate
    - Use information and communications technology

**Impact on Learning**

"I could see that Equipped for the Future (EFF) was more than just a methodology of project-based learning in classroom instruction. The Standards were developed based on a philosophical belief in a customer-driven system, and the learners who were empowered to make decisions in the classroom and in the program, and given the skills to do so, were energized and invested in their learning. They were also learning the skills they would need in their adult roles. They were learning to use the generative skills while they were learning the subject content" (Stein, 2000, p. 65).

According to Stein (2002), the first year of the field development process of the EFF project, more than 100 teachers and tutors in 25 programs participated in trying out the framework and draft standards that had been developed. The following year, a smaller number of programs focused explicitly on using the Standards to collect evidence of student progress toward stated goals. From this work, the impact of learning, included the following aspects (pp. 65-87):

- Teacher and learner expectations, roles, and responsibilities for reaching desired goals grew beyond traditional boundaries.

- Planning and identification of learning expectations are based upon local situations and needs.
- Learner goals evolve as their skills and confidence increased.
- Learners and teachers develop deeper relationships with community members.
- Components of performance are used to define and collect evidence to show that learning had taken place.
- Classroom learning becomes integrated with work-based projects, basic skills training, and parenting and life skills preparation.
- Learners gain skill in managing resources and guiding others.
- Portfolios are used to document student learning.
- Learning results from contextualized teaching, intentional teaching, reflection on learning, and assessment of learning.

**Implications for New Designs**

- Understand the complex sets of skills that are required of adults for the 21st century.
- Develop multiple ways to meet the needs of the adult learners and deliver quality courses and programs at times and places that are convenient.
- Include skill training in becoming responsible for one's own decisions, actions, and continued learning.
- Provide staff development time for administrators, teachers and faculty, and staff to gain an understanding that learning is a "whole person" activity that prepares people for life's roles and requires strong personal and group skills.

## *New Designs for Career and Technical Education*
## *Design Review No. 37*

### Essential Workplace Skills for the 21st Century*

**Definition**

In 1991, the Secretary of Labor, from the U. S. Department of Labor, formed the Secretary's Commission on Achieving Necessary Skills (SCANS) to identify foundation skills and workplace competencies that effective workers need and use in a high performance workplace. The fundamental purpose of the Commission was to encourage a high-performance economy characterized by high-skill, high wage employment.

A primary objective of the work of the Commission was to guide changes in the curriculum and teaching/learning processes in high schools and community and technical colleges to prepare youth and adults for the high-performance workplace. The Commission's initial report, *What Work Requires of Schools*, outlined the following foundation skills and workplace competencies.

**Key Features**

Foundation skills:

- Basic Skills–Reading, writing, arithmetic and mathematics, speaking and listening.
- Thinking Skills–Ability to learn, to reason, to think creatively, to make decisions, and to solve problems.
- Personal qualities–Individual responsibility and self-management, sociability, and integrity.

Workplace competencies:

- Resources–Allocate time, money, materials, space, and staff.
- Interpersonal skills–Work on teams, teach others, serve customers, negotiate, and work well with people from culturally diverse backgrounds.
- Information–Acquire and evaluate data, organize and maintain files, interpret and communicate, and use computers to process information.

*U. S. Department of Labor. 1991. *The secretary's commission on achieving necessary skills.* Springfield, VA: National Technical Information Service, U. S. Department of Commerce.

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- Systems–Understand social, organizational, and technological systems; monitor and correct performance; and design and improve systems.
- Technology–Select equipment and tools, apply technology to specific tasks, and maintain and troubleshoot equipment.

**Impact on Learning**

- Uses more active learning processes in learning experiences.
- Integrates basic skills, higher levels of cognition or thinking skills, and personal skills with content matter.
- Teaches learners systems thinking and understanding of complex inter-relationships.
- Prepares learners for high-skill, high-wage jobs and careers.
- Provides use and application of appropriate technologies to achieve learning.

**Implications for New Designs**

- Provide multiple learning experiences to acquire, practice, and demonstrate desired skills and competencies.
- Work with business and community partners to develop curriculum and assessment methods that support the acquisition and demonstration of the skills and competencies.
- Provide support for teachers, faculty, and staff in the revision of curriculum and development of various teaching and assessment methods.

## *New Designs for Career and Technical Education*
## *Design Review No. 38*

### New Designs for the Two-Year Institution of Higher Education: Learning Expectations*

#### Definition

Learning expectations refer to the added value developed by a learner through a learning experience. Because teaching and learning are central to the two-year institution, the learning expectations are a keystone in designing the institution and its way of organizing and operating (Copa & Ammentorp, 1998).

#### Key Features

- **Wide range of learners**–Two-year institutions need to provide ready access and serve the needs of all learners (i.e., ages, interest, needs, expectations, ethnicity, socioeconomic status, and gender).
- **Wide range of lifeplaces**–Two-year institutions need to provide learning opportunities in the many settings and situations that people make contribution to, in particular, in the context of work, life, community, and personal life.
- **Wide range of talent and human development**–Two-year institutions must address the multitude of ways in which individuals contribute to society (e.g., academic, career and technical, and social).
- **Future oriented**–Two-year institutions must focus on the challenges and opportunities of living in the 21st century.
- **Change agents**–Two-year institutions must provide learning experiences that enable and empower learners to take on the challenges and seize opportunities to improve living conditions locally, nationally, and internationally.
- **Excellence**–Two-year institutions must strive for excellence in offerings and services.
- **Consensus**–Two-year institutions must press for agreement among its many stakeholders regarding mission and learning expectations.
- **Expedient**–Two-year institutions must be clear in setting forth its learning expectations.

*Copa, G. H., & Ammentorp, W. (1997). *New designs for the two-year institution of higher education.* Berkeley, CA: National Center for Research in Vocational Education, University of California.
This Design Review was prepared by George H. Copa, Ph. D. for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

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## Impact on Learning

Learners will leave the two-year institution with added general and specialized competence in the context of work, family, and community responsibility in order to:

- Function in a diffuse and complex environment.
- Work independently and collaboratively.
- Make decisions.
- Use information.
- Communicate ideas.
- Use technology.
- Solve problems and take advantage of opportunities.
- Produce results in an area of endeavor.
- Manage one's own continuous learning.

As an illustration, Hennepin-Technical College in Minnesota adopted the following learning expectations:
Hennepin Technical College learners will:

- Take pride in work.
- Manage transitions/change.
- Use technology competently and adaptably.
- Recognize and value others.
- Take personal responsibility for continuous learning.
- Manage work and other areas of life.
- Think entrepreneurially.
- Think critically and solve problems creatively.
- Communicate ideas.

## Implications for New Designs

- Align with the learning context, audience, and signature.
- Involve internal and external stakeholders in evaluation of learning expectations.
- Focus on all who seek learning and services from the institution.
- Address work, family, community, and personal life in a holistic manner.
- Represent balanced attention to all areas of human talent and development.
- Direct attention to what is needed for the 21st century.
- Prepare learners to be active change agents in improving the future state of society.
- Involve reaching for excellence in all aspects of the institution.
- Represent goals for all learners in the institution.
- Communicate clearly and concisely.

## *New Designs for Career and Technical Education*
## *Design Review No. 39*

### Designing Curricular Framework with College Wide Learning Expectations*

**Definition**
Since the early 1970's, Alverno College faculty have been developing and implementing ability-based undergraduate education. The abilities that all graduates will leave Alverno College with include: (a) communication, (b) analysis, (c) problem solving, (d) valuing in decision-making, (e) social interaction, (f) global perspectives, (g) effective citizenship, and (h) aesthetic responsiveness. The abilities are taught within the subject matter. According to an Alverno College publication (1994), one of the greatest challenges for the faculty was to understand that the development of college-wide abilities was not separate from developing subject matter content. To facilitate this integration, faculty are organized not only by their department but also by one of the eight ability groups. Budgets and funding are also allocated by department and by each of the ability groups. In describing why the College sees this integration as important, they explain that "students should be able to do something with what they know." Alverno is seen as one of the leading institutions for using learning outcomes and assessment.

**Key Features**-The assumptions and implications of their work is described below:

**Assumptions**

- Education goes beyond just knowing to being able to do what one knows (ability integrated with knowledge).
- Educators are responsible for making learning more available by articulating outcomes and criteria for successful performance.
- Outcomes are generic abilities, not specified tasks.
- Abilities can be developed.
- Abilities can be assessed.
- In order to be a lifelong learner, one must be able to evaluate one's own work.

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*Alverno College. (1994). *Ability-based learning program.* (1990) 14th annual workshop on assessment as learning. Milwaukee, WI.

This Design Review was prepared by Susan J. Wolff, Ed. D. for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

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**Implications**

- Outcomes must be carefully identified and compared to what contemporary life requires.
- Learning must be active.
- Active learning involves:
  - -Clarification of information.
  - -Determined practice in using information and ability.
  - -Assessment of progress.
  - -Feedback on successes and areas to work on in order to turn them into successes.

Assessment is an integral part of learning.

- Assessment must involve a sample of behavior carefully observed and judged on the basis of explicit criteria.
- Abilities must be developed and assessed in multiple modes and contexts.

**Impact on Learning**–As a result of implementing the college-wide abilities, learners are able to:

- Develop a sense of responsibility for her/his own learning and the ability and desire to continue learning independently.
- Develop self-knowledge and the ability to assess her own performance critically and accurately.
- Develop an understanding of how to apply and transfer her knowledge and abilities in many different contexts.
- Become responsible for her own lifelong learning.
- Use the framework from each of the abilities to combine knowledge and skills in complex ways.

**Implications for New Designs**

Clear identification of learning expectations is a "keystone" to effective learning experiences. Even more challenging, is the integration of the learning expectations into all other design elements (i.e., process, organization, partnerships, staffing, environment, accountability, and celebration). Other actions to consider are the following:

- Develop authentic assessments of the abilities that demonstrate achievement.
- Organize learning and staffing to support the integration of the abilities into course and program content.
- Create partnerships with business and community agencies to assist with development, refinement, and assessment of abilities.
- Provide time for and support to staff to identify, assess, and revise curriculum to support the abilities and identify specific abilities that will be addressed in each course keeping in mind how the abilities relate to the entire college curriculum.

## *New Designs for Career and Technical Education*
## *Design Review No. 40*

## Assessments and Accountability

### Definition

Legislative mandates, policies adopted by state or local boards of education, and ideological shifts have all affected the use of tests and assessments in the last five decades. The effects from the reform efforts are listed below.

### Key Features

- 1950s tests used for tracking and selection–emphasis on a universal elementary education, comprehensive secondary education, and a highly selective meritocratic higher education.
- 1960s tests used for program accountability–attention shifted to compensatory education and the reduction of disparity in educational opportunities and performance.
- 1970s tests for minimum competencies–focus on the lower end of the achievement distribution. Minimal basic skills were widely accepted as a reasonable requirement for high school graduation.
- 1980s tests used for school and district accountability–beginning of movement toward high stake student requirements.
- 1990s tests derived from standards based accountability systems–increased real or perceived high stake teacher and administrator requirements.

Salient characteristics of reform efforts in the late 1990's leading to more current efforts include the following:

- Standards are central to the Clinton Administration's Goals 2000: Educate America Act.
    - States will be the key players in the standards-based reform efforts.
    - States will develop demanding content and performance standards.
    - States will develop standards-based assessments and reporting.
- Content standards can, and should, influence both the choices of constructs to be measured and the ways in which they will be measured.

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- Content standards have dual goals of the same high-performance standards for all students.
- Accountability will move away from input regulation; (i.e., number of books in the library), to a model of steering by results using rewards, sanctions, and assistance.
- President Clinton's "Call to Action for American Education in the 21st Century" requires that students demonstrate what they have learned in order to move from one level to another and put an end to social promotion.

Reform efforts in the early 2000's continue to stress standards, testing, and accountability (American Federation of Teachers, 2001) with a push for states to do more in regards to developing curriculum to support their standards, using high-quality tests, aligning their tests to state standards, and providing additional funds to assist students who are failing to meet the standards (p. 5). In 1997, only 13 of the 50 states had high school graduation exams based on 10th grade standards or higher, but by 2001 the number of states with clear and specific standards had increased to 29. According to the American Federation of Teachers (AFT) (2001), more states are:

- Giving greater emphasis to academics.
- Paying attention to the educational needs of students at risk of failure to meet the standards.
- Undertaking formal studies to align their standards and assessments, and to benchmark their standards to external models of excellence.
- Providing more incentives to encourage students to reach higher standards;
- Making more instructional material accessible to teachers via the Internet.

Recommendations to the states to maintain the standards based reform efforts include:

- Explain the standards and performance levels that have been set.
- Compare their standards, assessments, and results with other countries who have high performing students.
- Provide examples of standards and student work at the various levels so students, teachers, and parents know what is to be expected.
- Support teachers in developing curriculum to meet the standards.
- Examine policies and practices related to assessment to allow sufficient time for implementation and promote multiple tools for assessment.
- Reward achievement of the standards.
- Provide sufficient resources to meet the goals of the states' education reform efforts.

### Impact on Learning

- Maintain focus on student learning and development, rather than on the tests.
- Ensure that all learners have adequate and equal access to human and material resources to support their efforts.
- Determine what gaps in support may exist and develop plans to eliminate deficiencies.
- Assist students in understanding the necessity for high standards in that meeting the standards will help them succeed and continue that success in further education or in the workplace.

### Implications for New Designs

- Participate in leadership efforts in determining appropriate standards for local states and districts.
- Focus on curriculum development first and then develop the tests.
- Provide support in terms of time and materials for teachers and faculty to revise curriculum and assessments to meet the standards.

- Work with local, state, and national business and labor to set high standards for learning (e.g., incorporate National Skill Standards and Career Cluster work into state standards, curriculum, and assessments).

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American Federation of Teachers (2001). *Making standards matter, 2001: An annual fifty-state report on efforts to raise academic standards.* Executive Summary. Washington, DC: American Federation of Teachers.

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# *New Designs for Career and Technical Education*
## *Design Review No. 41*

## Learning Outcomes for the 21st Century*

### Definition
The League for Innovation in the Community Colleges developed a two-stage project for community colleges to define for 21st century skills needed by students and develop processes to assess acquisition of the skills. The stages are:

- Achieve consensus among leading colleges regarding what constitutes 21st century skills.
- Determine the current status of activity regarding efforts of the community colleges to define and certify competencies related to student learning.

### Key Features
The 21st century skills for students identified by the League project are:

- Communication skills (reading, writing, speaking, listening).
- Computation skills (understanding and applying mathematical concepts and reasoning, analyzing and using numerical data).
- Community skills (citizenship; diversity/pluralism; local, community, global, environmental awareness).
- Critical thinking and problem-solving skills (analysis, synthesis, evaluation, decision making, creative thinking).
- Information management skills (collecting, analyzing, and organizing information from a variety of sources).
- Interpersonal skills (teamwork, relationship management, conflict resolution, workplace skills).
- Personal skills (ability to understand and manage self, management of change, learning to learn, personal responsibility, aesthetic responsiveness, wellness).
- Technology skills (computer literacy, Internet skills, retrieving and managing information via technology).

*Wilson, C. D., Miles, C. L., Baker, R. L., Schoenberger, R. L. (2000) *Learning outcomes for the 21st century: Report of a community college study.* League for Innovation. Pew Charitable Trusts. Mission Viejo, CA.

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Findings from a survey done in 2000 to determine the status of activity related to efforts by the community colleges in defining and certifying student learning competences were as follows:

- More colleges are teaching competencies than are defining, assessing, and documenting them.
- There are few who have institutional initiatives or plans to focus this work.
- There is great difficulty in developing uniform language, definitions, and assessment procedures for such institutional efforts.

### Impact on Learning

- Imbed identified learning skills into curriculum and develop multiple ways to assess acquisition of these skills as a means to prepare learners for life and the workplace.

### Implications for New Designs

- Provide leadership assistance to faculty and encourage business and community involvement in developing appropriate assessment methods.
- Revise internal policies and practices to support importance of identifying, teaching, assessing, and documenting achievement of skills.
- Develop documentation and tracking systems for skill acquisition that are portable to other learning institutions or to the workplace.
- Provide on-going support and recognition of staff efforts for revising curriculum, teaching and assessment methods, and for the learners who have attained and demonstrated the skills.
- Seek resources to assist faculty in revising curriculum, assessment methods, and reporting mechanisms.

## *New Designs for Career and Technical Education*
## *Design Review No. 42*

### National Skill Standards*

### Definition

The National Skill Standards Act, passed by Congress in 1994, established a National Skill Standards Board (NSSB) that initiated development and adoption of a voluntary national system of skills standards in high-demand career clusters and assessment and certification of those standards. The primary purpose of the legislation and goal of the Board was to create a skilled workforce.

Skill standards (NSSB, 2001) are performance specifications that identify the knowledge, skills, and abilities an individual needs to succeed in the workplace. Specifically, the standards delineate what a person needs to know for a specific job within a career cluster or across and industry sector. The standards include required knowledge and skills, levels of achievement, and means to measure performance. (p. 7) Industry members, employers, labor organizations, and educators develop and use the standards.

The NSSB common framework covers 15 industry sectors and three tiers of standards: (a) core, which apply to an industry sector, (b) concentration, which apply to an occupational cluster, and (c) specialty, which apply to specific jobs. The standards cover critical work functions; key activities; performance indicators; academic, employability, and occupational technical knowledge and skills; and statements of assessment.

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*National Skill Standards Board. (1994). *National skill standards act.* (2001). *National skill standards board: An introduction to the use of skill standards and certification in WIA programs.* Washington, DC: National Skill Standards Clearinghouse.

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**Key Features**

Why skill standards are needed:

- To communicate workplace expectations.
- To enhance employability and portability of skills.
- To match the curriculum to the requirements of the workplace.
- To close the qualifications gap.

Who benefits from skill standards:

- Employers–To assist in evaluating the skill levels of prospective employees and to assist in the training of current employees.
- Educators–To determine appropriate training and design curriculum accordingly, facilitate linkages with other partners to enhance workplace skills, include school-to-work transition, include career and technical education, and job training programs.
- Workers–To obtain certification of their skills, pursue career advancement, and enhance ability to reenter the workforce.
- Government–To evaluate publicly funded training programs to determine impact of skills standards in assisting participants and to protect integrity of public expenditures.

**Impact on Learning**

- Provides portability of certificates/credentialing of learning (i.e., Automobile Technician Certification awarded by the National Institute for Automotive Service Excellence (ASE)) that are recognized across the country.
- Provides skill transferability from one employer to another, which is desirable when workers need to be more mobile and understand they may have between five and seven different careers during their working years.
- Emphasizes need for continuous skill upgrading and lifelong learning.
- Provides consistency in knowledge and skill acquisition whether being provided by community and technical colleges, apprenticeship programs, Job Corp centers, proprietary schools, or employers.

**Implications for New Designs**

- Supports the "new economy" that is driven by technology, globalization, and de-regulation.
- Leads "change" efforts that require broad knowledge and skills, flexibility, cross-training, multi-tasking, teaming, problem-solving, and project-based work.
- Coordinates various workforce preparation programs through Perkins III, Workforce Investment Act (WIA), and other funding streams.
- Ensures business and agency partners buy-in and feel ownership.

## *New Designs for Career and Technical Education*
## *Design Review No. 43*

## National Skills Standards For Information Technology

### Preface

Information Technology (IT) is the fastest growing employment field in the United States today. The Information Technology Association of America (*ITAA, 2000)* reports that over 400,000 new IT jobs are created every year. However, current demand for IT jobs does not meet the supply. According to the NWCET (*National Workforce Coalition for Emerging Technology, 2001)*, Information Technology (IT) careers involve designing, developing, supporting, and managing hardware, software, multimedia, and systems integration services.

### Definition

Voluntary skill standards form a foundation for development of outcomes-based curriculum and assessment. These standards are based upon industry-identified knowledge, skills, and abilities necessary to succeed in the workplace (Northwest Center for Emerging Technologies, 1999, p. 3). The National Skill Standards Board (NSSB) has defined industry based skill standards for IT careers identifying a common set of technical skills, knowledge, and abilities (Skill Standards for Information Technology, 2001). These standards ensure that individuals seeking careers in the high-demand IT cluster are trained under the same set of national skill proficiency standards. Additionally, the standards clearly define what skills are required in the workplace (ranging from entry level to expert level) and communicate that information to all parties involved (e.g., CEOs, Human Resources managers, IT employees, educators, students). Thus Skill Standards serve, in essence, as a communication device.

According to the National Skills Standards Board (NSSB), representative job titles or careers in the IT field include the following:

- Database Development & Administration
- Digital Media
- Enterprise Systems Analysis & Integration
- Network Design & Administration

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- Programming/Software Engineering
- Technical Support
- Technical Writing
- Web Development & Administration

**Key Features**

Academic Knowledge and Skills (IT Core Curriculum (Northwest Center for Emerging Technologies, 1999) include:

- Analytical skills and problem solving
- Business organization and environment
- Coordination and communication skills
- Core computer software and hardware skills
- Project and process flow skills

General Career and Technical Knowledge and Skills include:

- Communication skills
- Organizational skills
- Team contribution and leadership
- Professionalism
- Critical thinking and decision-making
- Customer relations
- Self-directed and continuous learning

Specific Career and Technical Knowledge and Skills–As an illustration of the IT Skills Standards, one task required in the occupation of Digital Media is listed below with identified skills, abilities, and tools necessary to complete the task.

- Complete basic design and storyboard
    - -Knowledge of multimedia design elements, principles, and testing procedures
    - -Knowledge of storyboarding techniques, tools, and interface design principles
    - -Knowledge of navigation approaches
    - -Ability to evaluate graphic designs and access visual impact and effectiveness
    - -Ability to use wide range of computer graphic tools
    - -Ability to relate design to performance predictions

**Impact on Learning**

- Provides clear framework for curriculum components including foundational and employability skills, technical knowledge, and performance indicators.
- Demonstrates continuity and progression of career starting with high school through university levels of education.
    - - Those completing programs at the high school level can expect to find jobs in the following areas: network design and administration at the technician level, technical support, technical writing as a document specialist, and web page development.
    - - Those completing one- or two-year, post high school, certificates/degrees will find positions similar to those completing high school; however, at higher levels. Additionally, those completing one- or two-year certificates/degrees can pursue occupations in database development and administration, digital media, enterprise systems analysis and integration, programming, and web administration.
    - - Those completing four-year and graduate level positions are able to pursue careers atthe high end of each of the previously mentioned occupational areas or move into

programming and software engineering and all levels of web development and administration.

- Provides foundational assistance to high schools in developing curriculum.
- Enables students to achieve IT competence levels set forth in the national benchmark standards (*NWCET, 2001)*.
- Informs students, business, educators, and government about IT workforce education and development.

**Implications for New Designs**–Information Technology industry standards are designed to:

- Develop and sustain learning partnerships with educators and employers.
- Define learning expectations to (a) communicate workplace expectations, (b) enhance employability and portability of employees' IT skills, (c) limit the skills-qualification gap among employees, and (d) align educational curriculum requirements with business/industry needs (NWCET, 2001).
- Redefine organization of learning to include prior work experience to shorten time required to "re-skill" for an IT career.
- Provide learning processes and organization for "re-careering" through transferability of applicable skills acquired in other jobs to the IT field and vice versa.
- Stress importance of lifelong learning in that long-term career opportunities lie within the IT industry itself; however, numerous opportunities exist for IT careers in every sector of the economy, such as financial services, manufacturing, transportation, and education (EDC, 2001).

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## *New Designs for Career and Technical Education*
## *Design Review No. 44*

### Manufacturing Career Cluster

**Introduction**

The U. S. Department of Education, through the Office of Adult and Vocational Education, established 16 broad Career Clusters that include both academic and technical skills and knowledge needed for further education and work related to each cluster. Within the cluster, jobs range from entry level to professional level. The clusters are to be used as an organizing tool for educators, counselors, and parents in assisting students to identify career interests and goals. The Manufacturing Career Cluster was established in 1996, with the Building Linkages Among Academic and Skill Standards for Manufacturing Project (Manufacturing Consortium). Indiana State is leading a consortium of 18 states that have secured written endorsement of business, labor, government, and other state stakeholders. Three other states are considering joining.

**Definition**

The Manufacturing Career Cluster addresses the following occupations and industries: (a) machinist, (b) manufacturing engineer, (c) automated process technician, (d) production engineer or technician, (e) welding technician, and (f) quality technician. In late 2000, the Manufacturing Skills Standards Council (Manufacturing Council) completed the development of the first and fundamental component of the system–the manufacturing skill standards—with *A Blueprint for Workforce Excellence*. The American Welding Society has developed skill standards for welding technicians. The Manufacturing Consortium disseminates two publications (on the web), one for the education community and one for the business and labor community. The Manufacturing Council publishes skill standards for 14 manufacturing industries.

**Key Features**

The Manufacturing Consortium developed a curriculum framework that reflects the integration of existing industry-recognized skill standards and academic standards. Features of those standards are:

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- **Product Realization:**
  - Establishing customer needs
  - Designing for manufacturing
  - Designing production systems
  - Designing support systems
    - Developing prototypes

- **Production:**
  - Performing production planning
  - Maintaining and optimizing equipment and machines
  - Managing quality systems
  - Improving manufacturing processes
  - Providing for health, safety

- **Manufacturing Council Core Standards:**
  - Production
  - Manufacturing Production Process Development
  - Quality Assurance
  - Health, Safety, and Environmental Assurance
  - Maintenance, Installation, and Repair
  - Logistics and Inventory Control

## Impact on Learning

- Student goals (short-term training, certification, Associate of Applied Science degrees) drive the curriculum.
- Individualized skills-based training and assessment programs (made-to-order) will be needed by learners.
- Basic and foundation skills referred to as SCANS (Secretary's Commission on Achieving Necessary Skills (U. S. Department of Labor, 1991) will be integrated and assessed through the mastery of learning modules.
- Assessment will be continuous, real time, denoting levels of mastery, prescriptive, and student accessible.
- Multiple instructors will assess the skill mastery of any student within the program (this allows for flexible scheduling).
- Mastery of skills will be correlated to equivalent course completion and grades.
- Students will enter the workforce with documented and accredited high-level skills.

## Implications for New Designs

Learning institutions will need to:

- Develop and sustain partnerships with one another, business and industry, and state and international consortia.
- Organize learning to support multiple entry and exit points to align with learner and employer goals.
- Support the use of multiple learning processes.
- Provide staff development for teachers and faculty in incorporating the skill standards into their curricula and assessment activities.

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## *New Designs for Career and Technical Education*
## *Design Review No. 45*

## Health Sciences Career Cluster

### Definition

The Health Science Career Cluster includes a broad array of occupations including physician, physical therapist, radiological technologist, occupational therapist, medical assistant, exercise science/sports medicine professional, dental assistant, medical assistant, hospital administrator, nurses, certified nurse's aid, dietician, and food service personnel. Health sciences industries in the cluster range from small, not-for-profit medical or dental clinics, to national health delivery service systems and professional associations.

First funded by the U.S. Department of Labor and Education in 1992, as one of the initial 22 national voluntary skill standards projects, this career cluster has expanded and matured. The original partnership of seven states developed the initial 31 national health science and technology education standards. In 1996 the National Skills Standards Board, U.S. Department of Education, and the National School to Work Office funded the health science cluster to "build linkages" between national academic and skill standards with state school-to-work initiatives. Currently, there are 17 partner states participating in the development and implementation of the Health Science Career Path Model.

The Health Sciences Career Cluster has developed into a set of eight core standards with accompanying curriculum elements for the national health care standards, delivered primarily at the secondary level. Each core competency is a set of broad standards that serve as a foundation to occupations and functions across the health services. Work is currently underway to develop the post-secondary career path of advanced skill standards in four areas or concentration including: diagnostic, therapeutic, information, and environmental.

### Key Features

These standards specify the knowledge and skills that the vast majority of health care workers should possess.

This Design Review was prepared by Cam Preus-Braly for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

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- Core academic and skills standards at the secondary level
    - Academic Foundations
    - Systems
    - Legal Responsibilities
    - Safety Practices
    - Communications
    - Employability Skills
    - Ethics
    - Teamwork

Examples of these standards may include the following: read and prepare charts, reports, and manuals; perform mathematical functions; use health care terminology; apply knowledge of life sciences, such as biology, chemistry, physics, and human growth and development; and be aware of the history of health care.

Core technical standards and skills being developed at the postsecondary level include:

- Diagnostic Services
- Information Services
- Therapeutic Services
- Environmental Services

An example of standards and skills in Diagnostic Services Occupations includes the following abilities: (a) build a picture of the health status of the client at a single point in time, (b) understand the components and implications of requests for procedures, (c) plan when and how to implement the services by identifying purpose and intent of request, (d) report any inconsistency or error in the request to appropriate personnel, (e) involve appropriate persons in planning, and (f) match resources to needs.

## Impact on Learning

- Provides all skill standard efforts with a valuable and workable template beginning in elementary grades with career awareness, continuing on to career exploration in middle school, and progressing to career orientation/preparation in high school.
- Develops curriculum guidelines for use by elementary, middle, and high school teachers. Over 160 integrated instructional plans/guidelines are available providing relevant outcomes, model projects and curriculum ideas for all levels of the skill path, from career awareness through preparation.
- Develops an assessment guide that includes requirements, benchmarking with standardized testing, and over 50 aligned assessments and accountability criteria for the eight core standards.
- Provides professional development workshops, seminars, conferences designed to assist with the implementation of the curriculum, assessments, and other tools produced by the National Consortium on Health Science and Technology Education (NCHSTE).

## Implications for New Designs

- Provides foundation and guidelines for establishing meaningful learning partnerships between secondary and postsecondary institutions to implement seamless matriculation.
- Increases use of industry derived, standards based assessment tools.
- Provides clear standards for establishing learning expectations and reporting learning accountability.
- Increases opportunities for achievement of skills certification, degree completion, further education, and employment.

## References and Websites

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U. S. Department of Education, OVAE, Washington, DC, http://www.ed.gov/offices/OVAE/clusters

States Career Clusters, http://www.careerclusters.org

National Consortium on Health Science and Technology Education (NCHSTE). Okemos, MI: http://www.nchste.org

## *New Designs for Career and Technical Education*
## *Design Review No. 46*

### Transportation, Distribution, Logistics Career Cluster

### Definition

The Transportation, Distribution, and Logistics career cluster includes pilots, flight attendants, automotive technicians, warehouse managers, logistics managers, and truck drivers (U.S. Department of Transportation [USDOT], 2001a). The cluster project is a partnership between the U.S Departments of Education, Labor, Transportation, and the National School-to-Work Office.

Stage one of the development of the cluster was to organize major initiative partners, develop the career cluster framework, identify and develop curriculum assessment and technical assistance materials for schools, and select school sites to pilot test the framework and related resources. The second phase, still in progress, is to oversee and evaluate progress of nine project pilot sites comprised of five U.S. high schools, three technical schools, and one community college selected through a competitive application process (USDOT, 2001a).

### Key Features

The executive committee comprised of key business and labor organizations defined eight general career pathways and organized them by mode, then by people versus freight (USDOT, 2001c). The pathways are:

- Transportation operations–air/space transportation, rail transportation, water transportation, transit systems, motor vehicle transportation.
- Logistics planning and management services–people and freight.
- Transportation-related sales and services–people and freight.
- Transportation/mobile equipment maintenance and servicing–air/space, rail, water, motor vehicle.
- Transportation/distribution facility maintenance–air/space, rail, water, motor vehicle.
- Risk management, safety, and environmental management–air/space, rail, water, motor vehicle.

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- Transportation infrastructure planning and management–air/space, rail, water, motor vehicle.
- Warehousing and distribution center operations–air/space, rail, water, motor vehicle.

Other critical business functions in related industry sectors and career areas are transportation/mobile equipment design and development, transportation equipment manufacturing, transportation infrastructure construction, information technology services, security services, and training and licensing/certification.

**Impact on Learning**

One or more independent private or government agencies develop and maintain curriculum guidelines, skill standards, and assessment for most occupations in the cluster. For many industries in the cluster, professional development material, instructor recurrency training, certification, and instructor education workshops are conducted by the same regulatory and certifying agencies, which helps assure standardization of requisite curriculum, skill and completion standards, and certification processes and outcomes (ASE, 2001a; FAA, 2001a; NIMS, 2001). Dependent on the degree of regulation required for certification or assessment, the standards vary from general curriculum recommendations or guidelines to specific skills and completion standards for each task within a particular discipline. Examples of various standards include:

- Driving schools are not required to adhere to specific curriculum or completion guidelines other than state requirements for Commercial Driver's Licensing and their own internal training and safety standards, which vary widely (Association of Publicly Funded Truck Driving Schools [APFTDS], 2001).
- Automotive maintenance training or machinist training, curriculum, requisite skills, and completion standards are designed and maintained by independent agencies such as the National Institute for Automotive Service Excellence (ASE) or the National Institute for Metalworking Skills (NIMS). Major employers, such as automotive dealerships, select only workers who complete programs certificated by these institutions (ASE, 2001a, 2001b; Steve Roberts, personal communication, September 26, 2001).
- Aircraft pilot and aviation maintenance technical training are highly regulated by the Federal Aviation Administration and the National Transportation Safety Board. All aviation related skill standards are detailed in the code of federal regulations, and applications for any pilot or maintenance rating must show competency on written, oral, and practical examinations to within the completion standards specified in the applicable regulation and printed test standards (Federal Aviation Administration [FAA], 2001a). All instructors must demonstrate competency in specified skill standards and be re-certified every 12 months (FAA, 2001b).

**Implications for New Designs**

- Secondary and postsecondary career and technical education programs need to continuously self-assess and change to meet requirements for training toward technological advances and industry standards.
- Postsecondary institutions need to form industry partnerships, internships, and coop programs to maintain a competitive stance with relation to private sector and technical schools:
    - Exemplary models of this industry/education partnership already in operation are the Ford, Chrysler, and Honda community college automotive technology degree programs. These automotive technician training partnerships are excellent models for other community college career training programs and linkages to industry.
    - Joint advisory committees of college instructors, administrators, and industry partners work together to design and update curriculum, which includes paid cooperative

internships through the sponsoring dealership as part of the requisite degree completion criteria.

- Students apply for competitive selection into positions directly sponsored by an automotive dealership. The partnerships have proven highly successful, to the extent that some dealerships hire exclusively through the community college programs, and 63% of customers polled indicate they seek out mechanics certified through the programs (ASE, October 2001).

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# *New Designs for Career and Technical Education*
## *Design Review No. 47*

## Skill Certification

### Definition

Certification is both a title and a process to verify attainment of certain skills, abilities, and knowledge related to a particular line of work or specialized field. Certification and licensure are often used to indicate the same thing; however, governmental agencies usually issue licenses to indicate the right to practice an occupation, whereas certification by itself simply indicates competency. To regulate the various entities granting certification, the Council on Licensure, Enforcement, and Regulation (CLEAR), provides information about occupational licensing in the United States and Canada.

### Key Features

The two general categories of certification are those:

- Bestowed by organizations or professional associations – based upon a set of requirements related to instruction, technical preparation, work experience, and assessment.
- Granted by industry or product-related businesses – based upon specific technical and product related skill and knowledge attainment.

A sampling of organization and professional associations granting certification include:

- **The National Organization for Competency Assurance (NOCA)**–promotes excellence in competency assurance for practitioners in all occupations and professions. NOCA develops high quality standards and gives accreditation to organizations that meet the standards, evaluates methods used for assuring competency, recommends policies, outlines functions of certifying organizations, and carries out research in the field of competency assurance.
- **The National Commission for Certifying Agencies (NCCA)**–an independent organization created in 1989 by the NOCA, accredits certifying agencies and develops standards based upon research and dialogue. It is known for emphasizing competency as the outcome and for providing the gold standard in certification standards. The certificate indicates the professional completed precise work, generated accurate judgments, and collaborated productively with other professionals.

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- **The National Skill Standards Board (NSSB)**–focuses on workforce skill standards, assessment, and certification of fifteen industry classifications. Business, labor, employees, educational institutions, and community and civil rights organizations volunteer to develop high performance work standards that are portable across industry divisions.

### Impact on Learning

Certification assures that:

- Students receive necessary skills to be successful.
- Programs incorporate industry-directed components, which results in up-to-date programs, course offerings, and assessment tools.
- Programs meet high standards and are accountable for providing expected outcomes.
- Communities benefit from credible programs and a skilled workforce.

### Implications for New Designs

- Skill standards, which are a part of the skill certificates, provide clear identification of learning expectations for educational programs.
- Students leave programs with certification indicating attainment of expected levels of competence and increased employment opportunities.
- Partnerships with business and industry provide necessary skill standards and assessment tools.
- Knowledge of and adherence to accreditation and certification standards provide increased accountability to programs, outcomes, and employability of learners.

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## *New Designs for Career and Technical Education*
## *Design Review No. 48*

### Occupational Information Network Resource Center–O*NET™

**Definition**

O*NET is a relational database sponsored by the U. S. Department of Labor, Employment, and Training Administration that provides resources and information regarding 1,100 occupations nation-wide. The database provides service and resources to job seekers, educators, career counselors, and employers by describing job requirements and expected competencies.

The O*NET system is directly linked to other web sites that provide information regarding national labor trends and local job openings such as America's Career InfoNet (http://www.acinet.org) and America's Job Bank (http://ww.ajb.dni.us/). At inception of the system, job analysts provided the foundation of information contained in O*NET; however, in the future, data will come directly from workers and employers and be verified by researchers.

**Key Features**

Specific features of O*NET include:

- Capacity to locate occupations through skill requirements or key words.
- Electronic linkages that crosswalk O*NET occupational titles to eight other classification systems like the Dictionary of Occupational Titles and Office Personnel Management.
- Labor market information on employment levels, occupational outlook, and wages.
- "Occupational profiles" that give a short description of each occupation.
- Guidelines to appropriately use career interest and assessment tools and for the development and use of assessment instruments.
- Assessment tools at http://online.onetcenter.org/main.html for individuals to match abilities and interests to specific occupations.
- Activities for those seeking professional development or new careers.

This Design Review was prepared by Michelle Andreas for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

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## Impact on Learning

- Career exploration occurs through matching interests, abilities, skills, and importance of work with national labor trends and available jobs both locally and nationally.
- Relational aspect of O*NET illustrates effectiveness of linking several resource databases to provide different levels of service and allowing students to move from a selected career to specific jobs in locations of their choice.

- O*NET provides assessment tools to ensure learners leave an educational or training program with the skills and abilities required for a job in specific careers.
- O*NET assists faculty to create or modify certificate and degree programs to meet labor market demands based upon strong, relevant, and industry specific learning activities.

## Implications for New Designs

- O*NET and its accompanying website links, like America's Career InfoNet (http://www.acinet.org) support schools and colleges in predicting labor market changes and demand and skill and knowledge requirements (learning expectations) for various occupations. This information can inform and guide learning expectations and resource allocation decisions for educational programs.
- O*NET and its benefits foster beneficial partnerships between educators and employers.
- O*NET assists employers with identifying desired entrance skills and abilities for positions, developing effective recruitment and training programs, designing performance assessments, and determining promotional opportunities.

## References and Websites

America's Career InfoNet at http://www.acinet.org/
America's Job Bank at http://www.ajb.dni.us/
America's Labor Market Information System at http://www.lmi-net.
America's Learning Exchange at http://www.alx.org/
Department of Labor, Employment and Training Administration at
http://www.doleta.gov/programs/onet/onet_hp.asp
Occupational Outlook Handbook at http://stats.bls.gov/ocohome.htm
Office of Vocational and Adult Education at http://www.ed.gov/offices/OVAE

## Learning Expectations

Brown, B.L. (1997). *Adding international perspectives to vocational education* (Report No. EDO-CE-97-183). Columbus, OH: ERIC Clearinghouse on Adult Career and Vocational Education. (ERIC Document Reproduction Service No. ED407575).

Employees need global awareness and understanding of competitive, cultural, and economic factors that influence ways of doing business in an international arena. This awareness and understanding includes cross-cultural knowledge, intercultural communication skills, and awareness of political, geographical, and technological conditions that influence work in other countries. These skills can be learned through foreign exchange and internship programs, internationalizing the curriculum, and using intercultural instructional practices.

Imel, S. (1999). *Work force education: Beyond technical skills*. (Trends and Issues Alert No. 1). Columbus, OH: Center on Education and Training for Employment. (ERIC Document Reproduction Service No. ED426295).

Employers are seeking employees with capabilities for knowing how to learn; competence in reading, writing, and computation; effective listening and oral communication skills; adaptability through creative thinking and problem solving; personal management skills involving self-esteem and initiative; interpersonal skills; ability to work in teams; leadership effectiveness; and basic technology skills.

Overtoom, C. (2000). *Employability skills: An update* (Report No. EDO-CE-00-220). Columbus, OH: Center on Education and Training for Employment. (ERIC Document Reproduction Service No. ED445236).

The American Society for Training and Development (ASTD) conducted a research study in 1990 that identified 16 skills groups related to basic competency skills, communication skills, adaptability skills, developmental skills, and group- effectiveness skills. Based upon the work of the ASTD, the U. S. Department of Labor established the Secretary's Commission on Achieving Necessary Skills (SCANS) in 1991. The findings from the SCANS report included 36 skills relating to the following five abilities: resources, interpersonal skills, information, systems, and technology. The challenge for educators is to integrate these employability skills into curricula using established standards and evaluation methods and determining how best to transcript achievement of the skills.

# Design Reviews for the Learning Process

## *New Designs for Career and Technical Education*
## *Design Reviews No. 49*

### Career Guidance

**Definition**

Career Development is the total constellation of psychological, sociological, educational, physical, economic, and chance factors that combine to shape the career of any given individual over their life span.

Career Guidance means assisting in career development; encompasses all components of services and activities in educational institutions, agencies, and other organizations that aid in the lifelong process of developing beliefs and values, skills and aptitudes, interests, personality characteristics, and knowledge of the world of work.

**Key Features**

Student Outcomes from the National Career Development Guidelines[1]:

- *Self-knowledge*–Self-concept, growth and development, and interpersonal skills.
- *Educational and Occupational Exploration*–Relationship between learning and work, career information skills, job seeking, maintenance and advancement skills, and recognizing the impact of social and labor market changes on careers.
- *Career Planning*–Knowledge of decision making, planning for diverse life roles, gender issues in career, and applying career planning skills.

Program Components

- *Work Based Learning Activities*–Interventions where students are guided in work-type settings, examples are job shadowing, cooperative education, service learning, internships, mentorship programs.

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[1] For more information on National Career Development Guidelines: http://icdl.uncg.edu/ncdg.html, and http://www.schoolcounselor.org/national.htm

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- *Counseling Activities*–Interventions by counseling personnel, examples include career interest assessments, career counseling, student education/occupation planning conferences, assisting mature students, students with disabilities and other special groups with educational concerns and needs.
- *Awareness Activities*–Interventions to promote awareness about the need for career exploration and planning: examples are career day/fair, professional/technical careers day, career aptitude testing, school based enterprise, career field trips, and job fairs.
- *Curriculum Activities*–Curricular and extra-curricular interventions; examples include career academies, VICA, Tech Prep/2+2+2, Advanced Placement, College in the High School, and Running Start programs.

**Impact on Learning**

Indirect effects

- *Reduced dropout rate*–Career guidance interventions have been demonstrated to significantly reduce the dropout rate in K-12 education and increase retention among college students as well.
- *Increased career and vocational maturity*–Some research has demonstrated that career guidance interventions produce an increase in student career maturity and vocational identity.
- *Positive school climate*–Students in more fully implemented guidance programs report being more adequately prepared for their future as well as a greater sense of safety and belonging.

Direct effects

- *Academic skills*–Career education interventions produce a small positive gain in academic achievement, measured by standardized and criterion-referenced tests as compared to when students receive no career education interventions.
- *Grades*–Students in more fully implemented guidance programs report earning higher grade point averages.

**Implications for New Designs**

- *Integrated/collaborative approach*–Integrate teaching and guidance/student services; increased collaboration among all those involved (teachers/faculty, counselors, parents, mentors, peers, funding agencies for tuition and supplies, employment services).
- *Learner-centered*–"Wrap-around" services to meet needs of students; replicating the "one-stop" career center model now being used with the Workforce Investment Act.
- *Personalized, life-long planning*–Link to all areas of life (e.g., work, family, community, personal).
- *Student diversity*–Respond to particular needs in light of students' gender, ethnicity, socio-economic status, geographic location, abilities, special needs.
- *Comprehensive service*–Serve all students, pervasive throughout educational system, rather than separate ancillary efforts.
- *Performance based*–Be accountable in terms of contribution to desired student learning expectations/outcomes.

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## *New Designs for Career and Technical Education*
## *Design Review No. 50*

## Collaborative Learning

### Definition

Collaborative learning is a pedagogical process in which learners and teachers actively work together within a learning context to create, discover, rediscover, and own knowledge. The pedagogy of collaborative learning is dynamic and ongoing, and pluralizes authority and power. Group diversity in terms of knowledge and experience contributes positively to the learning process. Collaborative learning is often used as an umbrella term for the following active learning processes: cooperative learning, problem-based learning, writing groups, peer teaching, discussion groups and seminars, and learning communities.

### Key Features

- Provides learning outcomes beyond content–Some of the outcomes include critical thinking, problem solving, teamwork, negotiating, reaching consensus, social and academic development, and learning to develop a sense of community.

- Establishes group size and composition–Groups of three to five members are recommended and can be assigned by: (a) random selection by the instructor, (b) various characteristics such as learning styles, experience levels, production levels, ethnicity, and gender to enrich the learning experience, or (c) self-selection, although this may result in a less diverse group and affect the richness of the learning experience.

- Defines types of group work–These include: (a) informal groups for ad hoc, temporary work, in a single class setting; (b) formal groups for teams to complete a specific task taking whatever time is needed to finish; and (c) study teams that are for long-term assignments over the course of the academic term.

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- Provides continuum of learning experiences from (a) simple to complex tasks; (b) acquisition of knowledge to the acquisition of skills and attitudes; (c) limited interaction in the classroom to extensive interaction in and out of the classroom; (d) students' experience levels of inexperienced to experienced.

- Assigns responsibility for learning and assessment–Criteria for learning and assessment is developed jointly by the instructor and the learners. There are individual and group accountability and assessment requirements.

**Impact on Learning**

Research indicates that learners who are actively involved in the learning process and who work in small groups tend to learn more of what is taught and retain it longer that when the content is presented in other instructional formats. Drill and practice teaching techniques are as effective for gaining knowledge; however, collaborative learning techniques increase the amount of knowledge gained, retained, and transferred into practice.

Today's learners are diverse in terms of educational backgrounds, prior experience and skill levels, multiple responsibilities and goals, ethnicity, culture, and gender. Today's world needs people who are able to think critically, work in teams to achieve a common goal, solve problems, work in diverse environments, communicate well, and understand and accept rapid change in a dynamic society. Pedagogically, collaborative learning aligns with the needs of today's learners and world.

**Implications for New Designs**

- Faculty need to be very clear about learning expectations.
- Learning settings should be designed to support learning in small groups and teams.
- Assessment strategies need to include both group and individual performance review.
- Faculty need to teach learners to work in small groups and teams.
- Staff development should model cooperative learning.

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## *New Designs for Career and Technical Education*
## *Design Review No. 51*

### Cooperative Learning

**Definition**

Cooperation means working together to accomplish shared goals. When compared with competitive and individualistic efforts, cooperation typically results in:

- Higher achievement and greater productivity.
- More caring, supportive, and committed relationships.
- Greater psychological health, social competence, and self-esteem.

Cooperative Learning is a structured learning process of small groups working together to maximize their own and each other's learning and achievement of goals. The groups continue the process until all members successfully understand and achieve the desired outcomes. The learning activities are presented to the learners at the start of the process. Motivational and cognitive theories support the benefits of cooperative learning. The combination of theory, research, and practice makes cooperative learning one of the most noted instructional practices.

**Key Features**

- Promotes a variety of learning methods–These methods vary from very concrete and prescribed to conceptual and flexible.
- Promotes positive interdependence–Each group member's efforts are required and indispensable for individual and group success; each member will make a unique contribution through individual resources, role, and/or task.
- Promotes face-to-face interaction–Creates both academic and personal support systems through the promotion of each other's learning and successes; increases personal commitment to each other and each person's goals as well commitment to the group and group goals.
- Provides for individual and group accountability–Each individual is assessed and the results are given back to the group as well as the individual to ascertain who needs more assistance, support, and encouragement in learning.

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- Teaches interpersonal and small-group skills–Leadership, decision-making, trust building, communication, and conflict resolution skills are taught as precisely and purposefully as academic skills.
- Teaches group-processing skills–Group discussion and description of helpful and unhelpful actions, the achievement of goals, and the maintenance of the working relationship provides continuous improvement of the learning process.

## Impact on Learning

Cooperative learning:

- Prepares learners to engage in a lifetime of knowledge acquisition and reasoning skills to think critically and to solve problems. This preparation happens through making the learning process more similar to life situations in which teamwork and coordination are required to achieve life goals.
- Teaches skills for being active members of workplaces, families, and communities. These skills are communicating effectively, solving problems, and contributing to the well-being of others.
- Prepares learners for constant and rapid change, to manage interdependence, and to resolve conflicts within teams and systems comprised of people from different cultures and ethnicities.
- Enhances learning effectiveness for groups who are diverse in knowledge and experience levels, who are experiencing different levels of social behavior and have need for support systems, and for those whose native language in not English and who bring different cultural perspectives to the learning experience.

## Implications for New Designs

- Faculty need to be very clear about learning expectations.
- Learning settings should be designed to support learning in small groups and teams.
- Assessment strategies need to include both group and individual performance review.
- Faculty need to teach learners to work in small groups and teams.
- Staff development should model cooperative learning.

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# *New Designs for Career and Technical Education*
## *Design Review No. 52*

## Constructivism

### Definition

Constructivism is a learning theory and educational framework based upon cognitive and developmental psychology, philosophy, and anthropology. Brooks and Brooks (1993) propose that learning takes place when students internalize new information and connect it with prior knowledge to construct new thinking and understanding. Learners are aided in the construction of new knowledge through interaction with others and their environment.

Constructivism is often linked to education reform efforts and preparation of youth and adults for the demands of the 21st century (Brown, 1998). Learners become actively engaged in identifying problems and issues of relevancy for themselves and their community, using research skills to define questions and seek possible solutions, engaging in critical thinking with others, and constructing new meaning,

### Key Features

According to Brooks and Brooks (1993), here are the five features of constructivist pedagogy:

1. **Posing problems of emerging relevance to learners**–Teachers pose questions or problems and structure learning activities that encourage exploration and discovery and allow time for the learners to consider the problem and provide access to needed resources.
2. **Structuring learning around primary concepts**–Teachers organize information around problems presented in a holistic manner and give learners the opportunities to break the problems into parts and seek multiple solutions.
3. **Seeking and valuing learners' points of view**–Teachers use the learners' points of view to structure the learning in ways that challenge the students, personalize the learning, and provide experiences that are contextual and meaningful.

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4. **Adapting curriculum to address students' suppositions**–Teachers design curriculum that is cognitively, socially, and emotionally accessible to the learners.
5. **Assessing students' learning in the context of teaching**–Teachers assess student learning in conjunction with their own learning, which monitors cognitive functioning of the learner, the disposition of the learner, and the status of the teacher-learner relationship rather than focusing on "right" and "wrong" answers.

## Impact on Learning

According to Brown (1998, p. 20), knowledge construction occurs through the following learning activities:

- Provide multiple perspectives and representations of reality.
- Have content and activities reflect the natural complexities of the real world.
- Focus on knowledge construction, not reproduction.
- Present tasks that are realistic, relevant, and authentic.
- Provide activities, opportunities, tools, and environments that encourage self-analysis, self-reflection, self-awareness, and metacognition.
- Foster reflective practice.
- Enable context- and content-dependent knowledge construction through social negotiation, collaboration, and experience.
- Emphasize problem-solving, higher-order thinking skills, and in-depth understanding.
- Highlight the complexities of knowledge construction by emphasizing conceptual interrelatedness and interdisciplinary learning.

## Implications for New Designs

- Apply constructivist pedagogy for all ages of learners. Constructivism may be especially useful for older learners who bring previous formalized learning, life and work experiences, and a clear need for what they want to learn.
- Include opportunities for teamwork, cooperation, collaboration, and cultural understanding in the learning process.
- Connect the learning to workplaces and communities.
- Use constructivism to integrate academics and career and technical education to provide meaning, relevancy, and holistic views to assignments.
- Design learning to go beyond the ability to perform skills to include demonstration of understanding when and how to apply the knowledge through flexible assessment processes.
- Use technology to provide learning and seeking of understanding in multiple ways.

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## *New Designs for Career and Technical Education*
## *Design Review No. 53*

### Experiential Learning

### Definition

According to the Association for Experiential Education (2001), experiential learning is defined as a "process through which a learner constructs knowledge, skill, and value from direct experience (p. 3)." Experiential Learning as an approach to learning has grown in popularity over the past 20 years and has been adopted by a number of areas of study including alternative education, career education, outdoor-adventure education, special education, wilderness therapy and adventure therapy, social and cultural work, team building, and corporate training (Luckner and Nadler, 1997, p. 5). Sakofs (1986) asserts that experiential learning is a philosophical orientation toward teaching and learning that values and encourages linkages between concrete, educational activities and abstract lessons to maximize learning.

### Key Features

The stages to the Experiential Learning Cycle (Luckner and Nadler, 1997) are as follows:

- **Experiencing**–The structured experience stage begins with data gathering and individuals participate in a specific activity.
- **Reflecting**–The process and reflecting stage is integral to the experiential learning cycle by bringing personal meaning to knowledge.
- **Generalizing**–The generalizing stage is when patterns are sought after to tie independent learnings to one another. In this stage the question "so what" is asked, rather than "what."
- **Applying/Integrating**–The application stage links the learning to the outside world and enriches the learning.

### Principles of Experiential Education Practice

- Experiential learning occurs when carefully chosen experiences are supported by reflection, critical analysis, and synthesis.
- Experiences are structured to require the learner to take initiative, make decisions, and be accountable for the results.

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- Throughout the experiential learning process, the learner is actively engaged in posing questions, investigating, experimenting, being curious, solving problems, assuming responsibility, being creative, and constructing meaning.
- Opportunities are nurtured for learners and educators to explore and examine their values.
- Learners are engaged intellectually, emotionally, socially, soulfully, and/or physically and results in authentic involvement in the learning process.
- Results of learning are personal and form the basis for future experience and learning.
- Relationships involving learner to self, learner to others, and learner to the world at large are developed and nurtured.
- Educator and learner may experience success, failure, adventure, risk taking, and uncertainty, since the outcomes of experience cannot be totally predicted.
- Primary roles of the educator include setting suitable experiences, posing problems, setting boundaries, supporting learners, insuring physical and emotional safety, facilitating the learning process, and recognizing and encouraging spontaneous learning opportunities.
- Supports the following principle issues (Cousins, 1998):

  -*Success and Failure*–Learning is conducted by a series of ongoing inquiries, or experiments, that can either succeed or fail, as experiments.

  -*Collaboration and Competition*–Learning in an active environment includes group work, and requires open space that promotes creativity, movement, and free thinking with others.

  -*Intimacy and Caring*–Attention to cultivating a community environment is paramount. This community nurtures individual and communal growth in a warm feeling space.

  -*Solitude and Reflection*-Sites should provide ample locations for thoughtful, engaged group and individual reflection.

  -*Service and Compassion*–Service helps students make the connection between the academic and the problems people encounter in everyday life (p. 64). The optimal site will support and encourage community service projects.

  -*Self-Discovery*–The magic of discovering a previously unknown passion can lead a student on an exploration of ideas and a quest to learn and reflect. The experiential learning site is one that promotes exploration of the world, ideas, and people.

**Impact on Learning**

- Provides effective learning beyond the traditional classroom (Priest, 2001).
- Demonstrates capacity to change and accept responsibility (Isenhart, 1983).
- Creates personal growth and understanding, extends one's personal limits, and builds professional relationships (Colorado Outward Bound School, 1988).
- Provides individual and group awareness and effectiveness through problem solving (Baldwin, Wagner and Roland, 1991).
- Moves students from passive learners to active participants by taking ownership and responsibility for their learning.
- Permits moral development (Garvey, 1991).
- Creates fluid learning environment for students and teachers.
- Generates long-term knowledge (Knapp, 1993).
- Provides a place for individuals to find oneself and their voice.

**Implications for New Designs**

- Plan and allocate resources for a common team planning time (Northwest Regional Education Laboratory, website, 2001).
- Establish and anchor an educational philosophy tied to outcomes that support an experiential learning climate and the learner.

- Organize daily timelines and calendars to support experiential learning that requires reflection and processing time.
- Staff in a manner that wholly supports the experiential philosophy and provide ongoing staff development.
- Support the close connection of the philosophy and methodology of experiential learning to the natural world and outdoor environment.

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## *New Designs for Career and Technical Education*
## *Design Review No. 54*

### Learning Styles

### Definition

A person's preferred learning style is a blend of cognitive, affective, and behavioral elements (Oxford, 1989) in the context of overall approach to learning and the environment. Oxford goes on to describe the four aspects of learning style as: (a) cognitive style in terms of preferred or habitual patterns of mental functioning, (b) patterns of attitudes and interests that affect what an individual will pay most attention to in a learning situation, (c) tendency to seek situations compatible with one's own learning patterns, and (d) tendency to use certain language strategies.

Claxton and Murrell (1988) explain the four elements of learning style as: (a) personality, (b) information processing, (c) social interaction, and (d) instructional methods. Additionally, they describe the two fundamental orientations to learning and categorizing of the various learning styles as: (a) those who analyze information logically and break it down into smaller pieces, and (b) those who watch for patterns and relationships between the parts. Successful learners use strategies that are appropriate to the material, the task, and to their own goals, needs, and stage of learning. More proficient learners tend to use a wider range of strategies in a greater number of situations.

### Key Features

Griggs and Dunn (1996) categorize the various elements that make up a preferred learning style into the following five categories:

- **Environmental learning style**–Includes sound, temperature, room design, furniture arrangement, display surfaces to demonstrate learning and provide for personalization, and light.
- **Emotional learning style**–Includes responsibility, structure, persistence, and motivation.

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- **Sociological learning style**–Includes social patterns (e.g., pairs, peers, adults, self, group, and varied) in which one learns.
- **Physiological learning style**–Relates to perceptual strengths, mobility, time of day, and intake of food and drink.
- **Psychological learning style**–Relates to global versus analytical processing or being a field-dependent or independent learner. Those who are field dependent are more group oriented and cooperative, whereas field-independent learners prefer to learn alone and are more competitive.

## Impact on Learning

- Work with career counselors and school psychologists to assess learning styles to gain awareness of strengths and challenges of each style and to become familiar with one's own preferred style.
- Attend to individual differences by being attentive to individual stimuli and elements that influence learning (Thompson & Mascazine, 1997).
- Recognize the implications of preferred learning styles, especially for under-prepared learners who may have experienced less success in prior learning experiences.
- Become aware of cultural influence on learning styles (e.g., Hispanic learners come from a family-oriented culture with an emphasis on cooperation; therefore, they are not comfortable with individual learning tasks, expressions of individuality, and competition) (Griggs & Dunn, 1996). Native American learners prefer to observe tasks, self-test in private, and demonstrate the task for approval. According to Swisher (1991), making mistakes in public is not an accepted way to learn; Native Americans focus on maintaining harmonious relations and group standards of achievement.
- Realize that adult learners bring experience to the classroom, and typically need to know how new knowledge relates to what they already know in order to create a framework within which to place and make sense of the new information (Howell, 2001).
- Include activities that provide opportunity to observe and gain awareness of other ways of learning and using information.
- Provide visual, auditory, kinesthetic, and tactile experiences in learning activities.
- Design curriculum that focuses on helping students learn how to learn.
- Assist learners in using learning strategies that correlate to their preferred learning style to acquire, store, retain, recall, and use new information.
- Prompt learners to take responsibility for their own learning.
- Recognize that providing for the different learning styles in the design of curriculum and learning experiences complements many education reform requirements.

## Implications for New Designs

- Focus learning on the audience and their unique needs and provide learning in the context of those needs.
- Incorporate cultural differences into the design of learning experiences.
- Organize learning in ways that benefit the diversity of learning styles.
- Provide faculty and professional development opportunities to recognize learning styles and ways to adapt curriculum and teaching strategies to improve learning.
- Design the physical learning environment in ways that respect various cultures and support different learning styles.

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## *New Designs for Career and Technical Education*
## *Design Review No. 55*

### Performance-Based Learning

#### Definition

Performance Based Learning is an approach to education where the learner is immersed doing tasks or performances and receives systematic feedback on proficiency (Hibbard et. al., 1996).

Outcome Based Education is an educational approach where the learning is focused on clearly defined outcomes as the desired result of the learning process. Learners are required to demonstrate pre-established competencies.

Mastery Learning is a process of learning where material to be learned is divided into structured, hierarchical, sequential units, each with an established level of performance representing mastery of a given skill or concept. Learners are given corrective instruction as they attempt to reach each unit's objectives and a formative test is given for each unit.

#### Key Features

- **Performance Assessment, Authentic**–Products or performances that are assessed are like those which occur in the real world (Brualdi, 1998).
- **Performance Assessment, Embedded**–A performance task that is placed within the learning experience (Brualdi, 1998).
- **Rubric**–A performance checklist, which guides the learner by detailing the performance criteria for each developmental level of the performance task (Brualdi, 1998).
- **Types of Performance-Based Assessments**–1) Station Activities: Students proceed through a series of discrete tasks, either individually or in teams, in a given amount of time, much as in a science laboratory (Ascher, 1990, p. 1). 2) Domain Projects: Students conduct a rich set of exercises designed to explore an idea, concept, or practice central to a particular subject matter domain (Ascher, 1990, p. 1). 3) Portfolios: An extension of domain projects, portfolios consist of several projects completed in a sequence to show students' progress with a subject (Ascher, 1990, p. 1). 4) Videotaping (Ascher, 1990, p. 1).

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- **Essential Elements of Implementation**–1) establish clear performance goals, 2) employ authentic tasks and products, 3) teach and emphasize criteria levels and performance standards, 4) provide models and demonstrations of excellence, 5) teach strategies explicitly, and 6) use ongoing assessments for feedback and adjustments (Ronin, 1999).

- Technology–Computers have been used to assist with test development, evaluation, and record-keeping responsibilities required of a mastery learning strategy (Motamedi and Sumrall, 2000). Mastery learning combined with computer-aided instruction can provide students extra time and feedback to meet objectives or additional programs for students who master objectives faster than other students.

## Impact on Learning

Performance-based learning:

- Supports different learning styles–Learning best occurs in the context of everyday experiences and under the condition of positive emotions (Berman, 1999). Performance-based Learning provides these optimal conditions.
- Increases accountability–States such as Minnesota, which have implemented outcome-based education, report improved student attendance, increasing SAT scores, increased student self-esteem, and increased teacher-student satisfaction with schooling (Towers, 1992a; Towers, 1992b).
- Improves student learning outcomes–Research indicates student achievement and retention of learned material is greater with mastery learning approaches as compared to conventional strategies (Garver, 1998; Harrison, et. al., 1999; 1995; Kulik, Kulik, and Bangert-Downs, 1990; Ritchie and Thorkildsen, 1994; Senemoglu and Fogelman, 1995).
- Addresses multiple subjects–Mastery learning strategies at the college level has significantly increased levels of learning in comprehension and application even in non-sequential courses such as psychology, philosophy, and sociology. Community colleges using computerized mastery learning components in anatomy classes have reported an increase of a full grade level in the average class grade (Garver, 1998).

## Implications for New Designs

- Incorporate cooperative learning techniques, computer-aided instruction, and constructivist learning principles with performance-based learning to enhance learning at all levels.
- Integrate assessment into learning process to reduce assessment time.
- Use continuous quality improvement in learning process.
- Work on rubrics obtaining agreement on performance standards and sampling of tasks.
- Link to external standards and assessors.

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## *New Designs for Career and Technical Education*
## *Design Review No. 56*

## Project-Based Learning

### Definition

Project-based Learning involves a learning process organized around projects. These projects are complex tasks, based on challenging questions or problems, and involve learners in design, problem-solving, decision making, or investigative activities; give the learners the opportunity to work relatively autonomously over extended periods of time; and culminate in realistic products or presentations. Project-based learning develops a community of scholars where learners and instructors create knowledge.

### Key Features

- **Authenticity**–Emanates from a problem or question that has meaning for the learners; provides opportunity to create or produce something that has personal and/or social value (beyond the teacher); has a real audience; shows learners reason for what they are doing (beyond grade); ideal context for use of technology, tools, and materials. The work is taken seriously by learners and others doing similar work; teachers help create context for work and serve as presenters, coaches, and audience; and the goal is to learn more about the problem or question and possible solutions, rather than seek the right answers to questions posed by the teacher.

- **Academic Rigor**–Leads learner to acquire and apply knowledge (may be from several disciplines); develop skills in inquiry, problem solving and higher order cognitive skills; improves research skills; takes real effort and persistence over an extended period of time; leads to mastering expert knowledge; blurs boundaries between disciplines and between "slow" and "fast" learners; creates a culture of accomplishment where everyone wants and needs high performance from one another; aligns with and leads to achieving one or more learning outcomes.

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- **Relationship building**–Leads to identifying and meeting with others who have relevant expertise and experiences; involves getting to know and work closely with others; support collaboration with others in project design and assessment.

- **Active learning**–Requires significant amount of time in field-based work, actively engaging the learner in real investigations using a variety of methods, media, and sources; involves project management skills in starting the project, conducting the field work, reflecting (individual and collective), documenting and exhibiting successive drafts and rehearsals; involves learners in the planning and assessment of the learning process; provides for flexibility in timing and sequence of learning; occurs during regularly scheduled classes and out-of-class time.

- **Debriefing and reflection**–Learners share information, opinions, and ideas with others based on what they have learned through the experience. Learners are involved in setting up the criteria for assessment, reflecting on their learning and doing periodic self-assessment; teachers and learners meet regularly to share the work learners are doing and discuss it.

- **Presentation of findings**–Learners write and present plans, reports, and other forms of documentation as a means to assess their findings. This assessment involves others from outside of the classroom environment, is open and involves the public, and the solution(s) are presented as a product or artifact.

### Impact of Learning

Project-based learning infuses higher-order thinking skills, guides learners in life choices, provides experiences that tap individual student interests and abilities, and uses authentic assessment techniques. There is a need for more empirical research regarding the impact on learning when using project-based learning. One study did describe the effects of the Expeditionary Learning Schools and Co-nect Schools (elementary and secondary), which participated in the New American Schools Designs study and have incorporated project-based learning. These schools have seen gains in learning ranging from 15% to 90%.

### Implications for New Designs

- Academic and career/technical content need to be integrated.
- Learning flows between the learning institution and the larger community.
- The learning context needs to reflect the components of project management.
- The learning experience involves use of technology and other related tools.
- The learning process needs to infuse the concepts and skills of globalization.
- Learning expectations and outcomes need to be learner centered, but at the same time, learners need to be able to successfully meet federal, state, and local performance standards.
- Assessment needs to take place often throughout the project, across the curriculum, and needs to be designed by both the learner and the teacher/faculty member.
- The learning audience brings more diversity in terms of age, gender, race, ethnicity, educational and life experiences.
- The learning signature needs to be concurrently dynamic and inclusive and reflect practice.
- Staffing and staff development needs to create opportunities for faculty and teachers to learn to design their instruction differently and to teach differently.
- The physical learning environment needs to be designed differently to support and enhance this learning process.

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**Additional resources**

www.glef.org

www.nwrel.org

## *New Designs for Career and Technical Education*

## *Design Review No. 57*

### Service Learning

**Definition**

The National Commission on Service Learning (NCSL, 2002) describes service learning as an approach that integrates community service with academic study to enrich learning, teach civic responsibility, and strengthen communities. Literature and research suggest that service-learning is both a philosophy and a methodology with multiple forms (Belbas & Shumer, 1996, p. 2). This learning process is built upon traditional principles of apprenticeship and uses educational experiential learning, project-based learning, and hands-on-learning methods fostered in the late 19th and early 20th centuries by John Dewey and Ralph Tyler (NCSL, 2002, p. 12), and links with the current concept of community service.

**Key Features**

Kraft (1996) describes educational experiences gained through service learning as:

- Learning and developing through active participation in thoughtfully organized service experiences that meet actual community needs, coordinated in collaboration with school and community.
- Integrating academic curriculum or providing structured time for thinking, discussing, or writing about activities and observations during the actual service activity.
- Providing students opportunities to use newly-acquired skills and knowledge in real-life situations in their own communities.
- Extending student learning beyond the classroom into the community and helping to foster the development of a sense of caring for others.

According to the NCSL (2002), features of service learning include a(n):

- Approach to teaching and learning that can be used in any curriculum area as long as it is appropriate to learning goals.
- Effective way to encourage and foster active citizenship as part of a public education;

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- Reciprocal approach, benefiting both the community and the student.
- Practice for students learning to determine and meet real, defined community needs.
- Method of teaching that combines community service with curriculum-based learning, linked to academic content and standards.

Belbas and Shumer (1996, p. 4) found that service learning takes place through intergenerational activities; social service activities; peer tutoring and mentoring; neighborhood improvement projects; and community projects such as food drives and banks, soup kitchens, and providing assistance in hospitals, nursing homes, and hospices.

Principles of Service Learning

According to Kraft (1993), the principles of service learning are:

- Engages people in responsible and challenging actions for the common good.
- Provides structured opportunities for people to reflect critically on their learning and their service experience.
- Articulates clear service learning goals for everyone involved.
- Allows for those with needs to define those needs.
- Clarifies the responsibilities of each person and organization involved;
- Matches service providers and service needs through a process that recognizes changing circumstance.
- Expects genuine, active and sustained organizational commitment.
- Includes training, supervision, monitoring, support, recognition, and evaluation to meet service and learning goals.
- Insures that the time commitment of service learning is flexible, appropriate, and in the best interests of all involved.
- Commits to program participation by and with diverse populations.

**Impact on Learning**

Research conducted by Kraft (1993) and a study done in 1993 by the University of Colorado, Boulder, on K–12 Serve America programs, Youth and Conservation Corps, and higher education programs shows mixed results in intellectual learning from and participation in experiential and service-learning programs. Students in other forms of experiential and service learning have been tested for gains in factual knowledge with the results being less conclusive. The study done at the University of Colorado determined it is too early to predict long-term impact of service learning on educational reform mechanisms into the next century (Kraft, p. 20).

The research conducted by the NCSL (2002) was broken into the following categories with the described ensuing impacts on learning.

- **Regarding Students**–When service learning is explicitly connected to curriculum, young people make gains on achievement tests, complete their homework more often, and increase their grade point averages. Service learning is associated with both increased attendance and reduced dropout rates (p. 9). Students who engage in service learning learn about career and communication skills, increase awareness of career possibilities, and develop more positive workplace attitudes than fellow students.
- **Regarding Schools**–Teachers and students tend to become more cohesive as a group. Students report feeling more connected to their school, while teachers report having more and deeper conversations about teaching and learning, and how learning best occurs (p. 9).
- **Regarding Communities**–Community members who participate as partners in service learning tend to change their perception of young people, viewing them as important resources and contributors.

### Implications for New Designs

- Learning processes used in service learning include mentoring, cross-age tutoring, and academic instruction.
- Staffing development needs to introduce the concept of service learning and assist teachers in gaining a deeper understanding of its complexities and what is necessary to ensure quality implementation (National Commission on Service Learning, p. 10).
- Accountability measures for learning need to include self- and peer assessments and not rely solely on numerical scores, seat time, or numbers of classes taken (Anderson & Drucker in Belbas and Shumer, 1996, p. 7).
- Reflective practices need to be important and intentional elements of sound educational programs (Belbas & Shumer 1996).
- Service learning and experiential education designs are highly unpredictable and the potential for constant change is high (Belbas and Shumer, 1996).
- Quality of learning can be enhanced by school staff investing time and energy in developing and sustaining community sites (Belbas and Shumer, 1996).
- Quality of learning also depends on the amount of responsibility given to students (Belbas and Shumer, 1996).
- Learning accountability is challenged with a wide variation of experiences found in community-based learning programs (Hamilton, in Belbas and Shumer, p. 8).

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**Learning Process**

Brown, B.L. (2000). *Changing career patterns* (Report No. EDO-CE-00-219). Columbus, OH: Center on Education and Training for Employment. (ERIC Document Reproduction Service No. ED445235).

Technology and global competitiveness have redefined interests, abilities, and work options that influence career development. In addition, increased job mobility and sequential career changes have changed the ways in which work is seen and accomplished. Career mobility no longer carries a negative connotation and is recognized by both employers and employees as necessary due to market place fluctuations, new jobs and job roles, and rapidly changing skill requirements. Possessing self-efficacy, holding a positive attitude toward job potential, and maintaining flexibility are essential in today's world of work.

Brown, B. L. (1998). *Service learning: More than community service (Report No. EDO-CE-00-219).* Columbus, OH: Clearinghouse on Adult, Career, and Vocational Education. (ERIC Document Reproduction Service No. ED421640).

Service learning provides work-based opportunities for learners to acquire organizational, team, problem solving, and other skills, attitudes, and capabilities for future work and learning. By connecting learners to communities in ways that result in the production of goods and services, service learning exposes students to challenges of community issues and with working with people from diverse backgrounds.

Brown, B. L. (1998). *Using problem-solving approaches in vocational education.* Columbus, OH: Clearinghouse on Adult, Career, and Vocational Education. (ERIC Document Reproduction Service No. ED418325).

Problem-solving approaches to teaching and learning, based upon theories developed by John Dewey, relate classroom learning to real-life situations or problems. The six steps in using problem-solving approaches to teaching and learning are: (1) identification of the problem situation, (2) definition of the problem, (3) search for information, (4) analysis of data, (5) testing of possible solutions, and (6) conclusion. Problem-solving approaches integrate technology into the instructional program and require that teachers improve their skills in group dynamics and interpersonal skills, and adapt instructional strategies, resources, and activities to promote learner's development of basic skills, thinking skills, and personal qualities.

Brown, B.L. (2000). *Web-based training* (Report No. EDO-CE-00-218). Columbus, OH: Center on Education and Training for Employment. (ERIC Document Reproduction Service No. ED445234).

Time-, place-, and job-bound students and employees are finding the availability of web-based training appealing and employers are realizing a significant cost savings in terms of time and dollars in keeping their work force well trained. Many who are accessing web-based learning are able to earn credits, certificates, and degrees while maintaining homes and employment. Learners who are successful in web-based learning are self-motivated and have the ability to develop metacognitive skills on the web. The learning must be presented in a way that accommodates varying learning styles.

Brown, B. L. (1998). *What's happening in school-to-work programs?* (Report No. EDO-CE-98-190). Columbus, OH: Clearinghouse on Adult, Career, and Vocational Education. (ERIC Document Reproduction Service No. ED414435).

The School-to-Work Opportunities Act was designed to improve student learning, retention, and provide a transition from school to the workplace. School-to-Work (STW) activities range from job shadowing to work assignments providing firsthand work environment experiences. Successful School-to-Work programs are organized to provide mutual benefits to businesses and schools, increased planning time and resources for teachers, prepare students properly for their STW assignments, involve parents, and offer on-going guidance and counseling.

Dirkx, J.M. (2000). *Transformative learning and the journey of individuation* (Report No. EDO-CE-00-223). Columbus, OH: Center on Education and Training for Employment. (ERIC Document Reproduction Service No. ED448305).

Earlier views of transformative learning were based upon the view that learning takes place through the use of critical reflection, reason, and rationality. This view was grounded in depth psychology research and theory. More recent work proposes that learning occurs at both conscious and unconscious levels. Conscious forces are directed by ego, whereas unconscious forces manifest themselves through the use of dreams, myth, legends, stories, rituals, and performing arts, and can also result from emotional interactions with others or with the learning materials. To include the unconscious forces, learning processes must evoke potentially powerful emotions through the use of active engagement with the learner that gives rise to awareness and ability to give voice to the unconscious forces. Through this active engagement, images and symbols characterize the deeper understanding gained about ourselves and the world around us.

Dykeman, C., Ingram, M., Wood, C., Charles, S., Chen, M. Y., & Herr, E. (2001) *The taxonomy of career development interventions that occur in America's secondary schools* (Report No. EDO-CG-01-04). Greensboro, NC: ERIC Clearing house on Counseling and Student Services.

A taxonomy of career development interventions for youth was developed through a research study funded by the National Research Center for Career and Technical Education. The taxonomy assists school counselors, administrators, and other school personnel to standardize career guidance language, develop a framework to assess career guidance activities, and compare the efficacy of specific types of career interventions. The four taxa or interventions identified in the study were: (a) work-based, (b) advising, (c) introductory, and (d) curriculum-based.

Imel, S. (2000). *Change: Connections to adult learning and education* (Report No. EDO-CE-00-221). Columbus, OH: Center on Education and Training for Employment. (ERIC Document Reproduction Service No. ED446252).

Change involves the questioning of assumptions and rethinking of premises. Adult educators are often seen as change agents who teach learners to think critically, use reflection, and provide a way for learners to become capable of taking action and changing the world. There is a clear relationship between the change process and adult learning. As an adult educator, it is suggested the following four areas be used as guides

for the learning process: (1) pay attention to context, (2) be prepared to be proactive, (3) attend to learning, and (4) build in action.

Imel, S. (1999). *New view of adult learning* (Trends and Issues Alert No. 5). Columbus, OH: Center on Education and Training for Employment. (ERIC Document Reproduction Service No. ED429211).

Adults seek learning in the workplace, the community, and their homes to enhance job skills, participate in community activities, and develop their personal lives. Recent research focuses on transformative learning, collaborative/group learning, and the use of technology as a delivery system and content area.

Kerka, S. (1995). *Authentic assessment in vocational education*. (Trends and Issues Alerts) Columbus, OH: Clearinghouse on Adult, Career, and Adult Education.

Authentic assessment connects learning and competence to workplace requirements and focuses on meaningful projects or tasks linked to the school and community partners. Educators need to ensure that the assessment reflects learning theories, promotes additional learning, uses multiple measures, and includes high academic standards.

Kerka, S. (1997). *Constructivism, workplace learning, and vocational education* (Report No. EDO-CE-97-181). Columbus, OH: Clearinghouse on Adult, Career, and Adult Education. (ERIC Document Reproduction Service No. ED407573).

Constructivism is based on the notion that learning takes place within a functional context, social context, and sense of usefulness. Learners actively construct new knowledge by integrating new learning with previous or existing experiences and form new constructs. The essential role of vocational education is "to facilitate construction of knowledge through experiential, contextual, and social methods in real-world environments" (Lynch 1997, p. 27). However, the literature shows that many vocational teachers do not facilitate constructive learning and instead focus on Prosser's behaviorist methods. Even though cognitive development in vocational education was instrumental in the development of education reform, practice in the field is not taking full advantage of other learning theories.

Kerka, S. (2000). *Incidental learning* (Trends and Issues Alert No. 18). Columbus, OH: Center on Education and Training for Employment. (ERIC Document Reproduction Service No. ED446235).

Incidental learning is unintentional or unplanned, and according to Rogers (1997), a more natural way of learning because it is situated, contextual, and social. Incidental learning may occur through observation, repetition, social interaction, or problem-solving and can lead to improved competence, changed attitudes, self-confidence, and self-awareness. Due to its nature, however, the type of learning is difficult to measure for learning outcomes.

Kerka, S. (2000). *Multiple intelligences and adult education* (Trends and Issues Alert No. 17). Columbus, OH: Center on Education and Training for Employment. (ERIC Document Reproduction Service No. ED446234).

Gardner's (1999) earlier research on multiple intelligences focused primarily on grade levels K-12. More recently, he has expanded his work to include adult education. Adults may have experienced unsuccessful learning experiences at a younger age when the only measure of intelligence was verbal and logical-mathematical scores. Gardner and others now recognize that the workplace requires interpersonal and intrapersonal skills as well as verbal and computation skills.

Kerka, S. (1999). *New directions for cooperative education* (Report No. EDO-CE-99-209). Columbus, OH: Clearinghouse on Adult, Career, and Adult Education. (ERIC Document Reproduction Service No. ED209).

Cooperative education is a secondary and postsecondary curriculum model linking work and academics and includes reflection and critical thinking. Earlier models of cooperative education were organized using alternating semesters with one semester in the classroom and the next at the work site, or using parallel model with half the day in the classroom and the other half at the workplace. One area being explored is organizing cooperative learning in different ways to meet the needs of adults and displaced workers. A continual concern for cooperative education is that it is often seen as an "add-on" component of educational programs and easily discontinued. To remain viable, work placement has to become integral to the educational purposes of the institution.

Kerka, S. (2000). *Virtual learning: The good, the bad, and the ugly* (Trends and Issues Alert No. 12). Columbus, OH: Center on Education and Training for Employment. (ERIC Document Reproduction Service No. ED437554).

The ability to gain an education was expanded with the advent of technologically delivered learning. Complete virtual universities were created: other educational institutions began offering selected programs and degrees through the use of technology, and some agencies began offering diplomas or degrees with no requirements for coursework. Accrediting agencies and the U. S. Department of Education have identified principles and guidelines for quality distance education.

Kuh, G. D. (1994). *Student learning outside the classroom: Transcending artificial boundaries* (Report No. EDO-HE-94-8). Washington, DC: George Washington University. (ERIC Document Reproduction Service No. ED346317).

Postsecondary learning can be enhanced through creating and supporting out-of-classroom experiences. Examples of these experiences are academic-theme or honors residences that foster critical thinking, intellectual development, and aesthetic appreciation, and student government that provides opportunities for understanding and appreciation of human differences. Outcomes of postsecondary out-of-classroom experiences include: (a) cognitive complexity, (b) knowledge acquisition and application, (c) humanitarianism, (d) interpersonal and intrapersonal competence, and (e) practical competence.

Lankard, B. A. (1992). *Integrating academic and vocational education: Strategies for implementation.* Columbus, OH: Clearinghouse on Adult, Career, and Adult Education. (ERIC Document Reproduction Service NO. ED346317).

Integrating academic and vocational education at the secondary level is used to increase retention, improve literacy rates, and offer a coherent sequence of courses for students to achieve academic and occupational competencies that result in better preparation for lifelong learning and employment. Models of integration include: (a) incorporating more academic content in vocational courses, (b) teaming vocational and academic teachers to enhance academic competencies in vocational programs, (c) making academic courses more vocationally relevant, (d) aligning curriculum, (e) assigning senior projects that integrate academics and vocation, (f) creating academies as a school-within-a-school organization structure, (g) designing occupational high schools and magnet schools, and (h) focusing on career clusters.

Mauer, M. J. (2000). *Integrating science education and career and technical education* (In Brief No. 3). Columbus, OH: National Dissemination Center for Career and Technical Education.

National Science Education Standards provide guidelines for achieving standards that will result in a scientifically literate society by year 2061. One goal is to "increase economic productivity through the use of the knowledge, understanding, and skills of scientifically literate person in their careers" (National Research Council 1996, p. 13). Science and technology became integrated through the use of electronics in daily lives and activities, and having an understanding of science is critical for many careers in the 21st century. Integrating the two areas provides learners with opportunities to become exposed to and use techniques and concepts used by professionals in the field.

Wonacott, M.E. (2000). *Apprenticeship* (Trends and Issues Alert No. 19). Columbus, OH: Center on Education and Training for Employment. (ERIC Document Reproduction Service No. ED448288).

Apprenticeship's work-based learning and direct tie to employment are being recognized once again as providing a quality learning experience directly tied to educational attainment and increased earnings. As a mechanism for making learning more relevant, apprenticeship programs meet the needs of School-to-Work and Workforce Investment Act initiatives.

Wonacott, M.E. (2000). *Career pathways* (Trends and Issues Alert No. 20). Columbus, OH: Center on Education and Training for Employment. (ERIC Document Reproduction Service No. ED448489).

Education, training, and occupational classifications are being organized to reflect skills that are shared among occupations rather than being based upon specific industries. Career pathways are being developed to organize learning and are also viewed as tools for career decision-making and workplace preparation. The U. S. Department of Education, Office of Vocational and Adult Education have established 16 career clusters. Educational institutions and business leaders are developing the curriculum frameworks and standards. The U. S. Department of Labor has developed the O*NET system that is an online, skills-driven occupational information system that links to the career pathways.

Wonacott, M. E. (2000). *Web-based training and constructivism* (In Brief No. 2). Columbus, OH: National Dissemination Center for Career and Technical Education.

Web-based training (WBT), although available in many forms, is basically concerned with learning provided through a network of computers. To many educators, this technology provides an ideal venue for constructivist learning. Constructivism is based upon the theory that learners actively construct meaning by interacting with their environment and incorporating new information into their existing knowledge. Virtual asynchronous and synchronous settings are means of providing active, self-directed, learner-centered, and collaborative learning supported by a variety of media and sequences to support differences in modality, cognitive styles, and multiple intelligences. Access to the Web provides access to a richness in resources, and the teacher can become more of a facilitator or guide to the learning process.

# Design Reviews for the Learning Organization

## *New Designs for Career and Technical Education*
## *Design Review No. 58*

### Career Clusters

**Definition**
Nearly all aspects of work, family, and community are undergoing a rapid transformation due to technological change. With the 21st century being labeled The Century of Technology, there exists the opportunity for career and technical education to become the keystone for the development of the necessary skills for the new workplace and the new challenges for families and communities. By 2000, technicians, technologists, journey workers, and other high-skilled workers were the core of the new economy. Forty percent of these workers hold two-year degrees, diplomas, and certificates, nearly twice the number holding professional baccalaureate degrees or higher. This new world of work values competency-based credentials, job-specific certification, and continuous, lifelong learning skills.

The Office of Vocational and Adult Education has defined 16 new career clusters that will address the entire labor market. Partnerships have been established for the development of curriculum guidelines, academic and technical standards, assessments, and professional development materials. These partnerships include states, local schools, area career technology centers, technical and community colleges, curriculum specialists, employers, business and industry associations. This effort complements the work being done by the National Skills Standards Board in developing skills standards for 15 specific industry sectors. The 16 career clusters are:

- Agriculture & Natural Resources
- Architecture & Construction
- Arts, AV Technology, & Communications
- Business & Administration
- Education & Training
- Finance
- Government & Public Administration
- Health Science
- Hospitality & Tourism
- Human Services
- Information Technology
- Law & Public Safety
- Manufacturing
- Retail/Wholesale Sales & Service
- Scientific Research & Engineering
- Transportation, Distribution & Logistics

This Design Review was prepared by Susan J. Wolff, Ed. D. for New Designs for Career and technical Education at the Secondary and Postsecondary Levels.

This design review was prepared as part of the project, New Designs for Career and Technical Education at the Secondary and Postsecondary Levels, which is a part of the program of work for the National Research Center for Career and Technical Education headquartered at the University of Minnesota and funded by the Office of Vocational and Adult Education in the U.S. Department of Education, PR/Award (No. V051A990006.) However, the contents do not necessarily represent the positions or policies of the Office of Vocational and Adult Education or the U. S. Department of Education, and you should not assume endorsement by the Federal Government. This project was directed at Oregon State University, a partner institution in the National Center. The Project Director is George H. Copa, Professor, School of Education, Oregon State University, Corvallis, Oregon. For more information, see the website for New Designs for Learning at Oregon State University at http://newdesigns.orst.edu. This design review is part of a larger series of reviews presented in the report: Wolff, S. J., & Copa, G. H. (2003). *New designs for career and technical education at the secondary and postsecondary levels: Compendium of design reviews of related research, policies, and exemplary practices.* Minneapolis, MN: National Research Center for Career and Technical Education, University of Minnesota. The full report is available on the above website.

The five career clusters that are currently in development stages are Arts, AV Technology, & Communications; Health Science; Information Technology; Manufacturing; and Transportation, Distribution & Logistics. The remaining clusters will be developed over the next three years.

**Key Features**

- Cover all entry-level through professional-level occupations in a broad industry area.
- Include academic and technical skills and knowledge needed for further education and career advancement.
- Offer schools a framework for comprehensive K-adult, career guidance, and counseling services and for the development of individual education/career plans.
- Empower learners to make informed, realistic, and appropriate educational and career decisions free of stereotypical and unrealistic thinking.
- Simplify and expedite the development of the secondary-to-postsecondary program-to-program articulation agreements for seamless pathways from secondary to postsecondary education.
- Focus directly on the unique knowledge and skill requirements of individual programs.
- Provide a common context for whole-school restructuring strategies such as career academies and other smaller learning communities; work-based, project-based, and contextual learning initiatives, New American High Schools, High Schools that Work, High Schools of the Millennium, and Essential Schools.

**Impact on Learning**

- Expect increased enrollments in career and technical education at both the secondary and postsecondary levels due to the increasing awareness of the highly favorable "cost-benefit ratio" of career and technical education.
- Redesign curriculum to teach high skills, high flexibility, and high engagement for the new workers, family members, and community citizens.
- Include National Skills Standards and workplace standards in the curriculum.
- Provide professional development opportunities and mentoring for college faculty to prepare them for the rapid influx of younger students coming from the high schools to the community and technical colleges.
- Develop new ways of teaching and learning that appeal to and impact the learning for these younger learners as well as for the adult learners seeking career change opportunities.
- Infuse the importance of lifelong career exploration and career opportunities into the curriculum for all learners.

**Implications for New Designs**

- Forge new and innovative partnerships and alliances with other learning providers and business/industry to provide opportunities for internships, apprenticeships, on-site and on-the-job training.
- Provide leadership in creating incentives for economic growth for communities by providing a local highly qualified and skilled labor pool.
- Organize learning around competency-based credentials, job-specific certification, and continuous, lifelong learning and skill upgrading.
- Ensure full access for women and minorities for these newly emerging and exploding high technology fields.
- Provide staffing and staff development to embrace new teaching and learning techniques and to support the career cluster concept.

- Create new forms of teacher preparation programs that focus on more active learning styles and workplace learning opportunities, including creating partnerships with a variety of learning providers.

- Provide training for community subject matter experts (SMEs) and adjunct faculty to become effective learning facilitators and mentors.
- Embrace continuous quality improvement, accountability, and data quality.

**References and Websites**

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U.S. Department of Education. *Building linkages to meet students' changing needs.* (2000). Washington, DC: U.S. Department of Education, Office of Vocational and Adult Education. www.ed.gov/PressReleases/03-2000/316.html

U.S. Department of Education. (2000). *Career clusters.* Washington, DC: U.S. Department of Education, Office of Vocational and Adult Education. www.ed.gov/offices/OVAW/cluster/index.html.

## *New Designs for Career and Technical Education*
## *Design Review No. 59*

### Block Scheduling

**Definition**
The daily learning schedule is organized into larger blocks of time to allow for more in-depth learning and application of the learning. Other assets include an increase in individualization and creative teaching strategies. Flexible scheduling better matches pedagogical practices that meet the educational needs of the learner and the professional needs of the educator.

**Key Features**
- Learning is less fragmented with block scheduling.
- Larger blocks of time allow for a more flexible and productive classroom environment and effective use of time.
- Learning becomes more personalized.
- Block scheduling allows for flexibility in the amount of time needed by individual learners to master course content and application.
- Teachers have longer planning periods.
- Teachers have fewer students; thus, increasing the opportunities to build positive relationships with each learner and decreasing record keeping and the number of learners to be assessed each grading period.
- Learners and teachers have more meaningful interactions.
- Teachers use more varied, creative, and active learning processes.
- Administrative functions are reduced due to fewer class periods, increased attendance rates, and less disruptive behaviors.
- Learning Centers can enhance block schedules by providing individual students or pairs of students with the opportunity to practice skills, extend knowledge and skills, rehearse knowledge and skills before assessment, and practice knowledge and skills that were not mastered in an earlier segment of the course.

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## Impact on Learning

- Block scheduling has a positive impact on the number of course credits completed, equal or better mastery and retention of materials, and an impressive reduction in suspensions and dropout rates.

Learners retain knowledge that they thoroughly understand and can apply. This knowledge occurs through concentration of attention and more immediate feedback.

- Hands-on and laboratory experiences are more productive and efficient.
- Technology is used to a greater advantage by allowing sufficient time for its use.
- Learners have fewer classes, quizzes, tests, and homework assignments on any one given day.
- Learners have greater opportunities for acceleration or for repeating failed courses.

## Implications for New Designs

- Adequate staff development time is essential for teachers to learn new teaching strategies that not only teach content but also require use of applications, synthesis of knowledge, and multiple methods to assess learning.
- Support is needed for teachers learning to use technology to enhance learning in their classes.
- Peer mentoring becomes integral for both teachers and learners.
- Longer time blocks of learning provide opportunities for creating and accessing learning partnerships with the community.
- Credit conversion between block schedules, quarters, and semesters will need to be addressed by the learning staff.
- Flexible seating and room arrangements are needed for more active learning processes.

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## *New Designs for Career and Technical Education*
## *Design Review No. 60*

### Learning Communities

**Definition**
"Learning communities" is a broad term used for a variety of curricular models that: (a) purposefully restructure the curriculum to link courses or course work during the same quarter or semester, (b) form groups of learners across courses or disciplines to find a greater coherence in what they are studying, and (c) increase the intellectual interaction between faculty members and learners within the learning community (Leigh-Smith, 1991, p.42).

A National Learning Communities Dissemination Project (MacGregor, 1999) found the following elements to be associated with the vitality of learning community efforts:

- Institutional readiness
- Funding and other resources
- Faculty involvement and faculty support
- Collaborative leadership group
- Assessment as a strategy for program development
- Commitment for the long term

**Key features**

- Learning community models can be organized into the following generic types:
  - Cohorts or subsets of learners within large classes
  - Course pairs or clusters that are not team-taught
  - Team-taught programs of study
  - Courses taught to separate learners but which come together in a common, interdisciplinary, and collaborative project
- Examples of learning community designs:
  - Freshman Interest Groups (FIGS)
  - Wrap-around seminars
  - Linked courses
  - Coordinated study programs

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- Common defining features:
  - Central theme or question around which the learning community program is focused
  - High and clearly stated expectations of learners with a willingness of faculty and learners to shift learning expectations if needed
  - Faculty team that works effectively together.
  - Emphasis on learner involvement such as active learning, frequent writing, and working in collaborative groups.

**Impact on Learning**

- Creates active involvement through participation in classroom learning and by extending the learning beyond the classroom.
- Encourages students to form their own support groups beyond the classroom.
- Enhances the quality of student learning.
- Increases the persistence of students who are more engaged both academically and socially than comparable students in traditional curriculum and learning processes.
- Increases a sense of responsibility for participation in the learning experience and an awareness of responsibility for their own learning and the learning of others.
- Develops awareness of multicultural awareness and other perspectives.
- Produces comparable to better grade point averages to learners in conventionally taught courses.
- Improves institutional ties.
- Fosters personal development and growth.
- Develops sense of community and citizenship.
- Supports faculty development, which positively impacts learning.

**Implications for New Designs**

- Advisors need to be aware of learner characteristics and preferred learning styles for proper advisement into learning communities.
- Faculty need to be trained in the techniques of active learning processes such as learning communities and in multiple ways of assessing learning achievement.
- Learners need to be trained in the development of and participation in learning communities.
- Administrators need to compare learner retention and persistence rates of learning communities with traditionally offered courses to achieve an accurate cost/benefit ratio.
- Learning activities need to be scheduled in non-traditional time frames.
- Learning communities need a physical environment that supports and enhances this learning process.

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## *New Designs for Career and Technical Education*
## *Design Review No. 61*

## Modularization of Curriculum

### Definition

Modularization of curriculum is a way of organizing learning material in self-contained units that fit learner needs rather than the rigid boundaries of traditional courses, degrees, and academic calendars. Modularization is sometimes referred to as "unbundling" of courses (most courses are based on a 3-credit, 45-hour model or similar time-bound criteria). Each module is a self-contained learning unit based on the achievement of a specified set of competencies or learning outcomes, and may be self-paced or teacher-led.

Modularization is most common in the UK, Australia, and New Zealand, where nationalized standards have been implemented for vocational qualifications known as Scottish Vocational Qualifications (SVQs) and National Vocational Qualifications (NVQs). In North America, modularization has been used primarily in vocational and technical programs, upgrading, and more recently, in distance-learning programs where standards (competencies) can be discretely defined. Some experimentation has been made to adapt modularization to professional and academic areas in the form of problem-based learning and case studies.

### Key Features

- Modules create greater access and flexibility to learning, to a variety of assessment tools, and to attainment of certification.
- Modules are more easily designated in vocational subjects where learning expectations are more process oriented than in academic subjects.
- Modules have clearly defined competencies/outcomes and assessment methods and expectations.
- Modules are self-contained, often having open entry and exit options and/or no pre- or co-requisites.
- Modules can be learned in a variety of places (e.g., workplace, at home, or in school).

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- Modules can be designed "just in time" (JIT) to meet changing needs in the workplace, which allows the possibility of lifelong learners to upgrade qualifications as needed, while continuing to work full-time.
- Prior learning assessment (PLA) can be used to determine skills or competencies already obtained and diagnose specific areas that are lacking, which can be learned through modules.

**Impact on Learning**

- Modularization requires and enforces more individual responsibility for learning and self-monitoring.
- Modularization favors high-ability students who can easily work independently and who are not social learners seeking a group experience. Academic advising, therefore, becomes central to the success of the students.
- Students report the condensed time frame leaves little opportunity to integrate their learning into other areas of concentration or to the larger education or training picture (Harrop &
- Woodcock, 1992).
- Modules offer more flexibility and choice in tailoring programs to individual needs and individual time schedules.
- Students can complete modules at their own pace.
- Students have the option of repeating a module as needed, rather than an entire course.

**Implications for New Designs**

- Nationalization/Globalization of standards for each profession or job would encourage transferability and portability of credentials.
- The learning process can be responsive to more diversity in learners in terms of age, gender, race, ethnicity, education, and life experience.
- Quick turnaround of the teaching and assessments process can increase teacher workload and record keeping and increase the number of students per instructor.
- Instructors need to be skilled in writing curriculum, determining competencies / outcomes and in providing clear assessment expectations and strategies.
- Content and assessment need to be integrated across the curriculum.
- Innovation is required to determine credit allocations, student grade point average (GPA), graduation or completion requirements, and transfer of credits.
- Module scheduling for "just-in-time" learning and for subject areas requiring some order of presentation or prerequisites becomes complicated.
- Staffing and staff development need to create opportunities for faculty to learn to design their instruction differently, to teach differently, and to provide flexible assessment.
- The physical learning environment needs to be designed differently to support and enhance both self-paced and teacher-led modules.
- Modularization is more expensive in terms of equipment and instructor time.

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## *New Designs for Career and Technical Education*
## *Design Review No. 62*

## Small Schools

### Definition

The term *small school* has no clear definition as to the "right" number of students for either elementary or secondary schools. The upward range for enrollment for small schools varies from 200 to 1000 students, while the range for large schools varies from 300 to 5000 students. People experience smallness in the contexts of quantity, time, proximity, knowing, relationships, and support. Several studies and reports indicate that there is a growing respect for learning that takes place on a smaller scale.

Good things can happen within smaller communities of learners whether it is in small classes, smaller schools, or large schools that "feel" smaller. Smaller learning communities occur through freestanding schools, school-within-a-school models, career academies, houses, magnet schools, charter schools, and block scheduling.

### Key Features

- Educators provide more individual attention to each learner.
- Parents are more actively involved in their learner's schooling and activities.
- Educators use innovative teaching practices.
- Class schedules are more flexible.
- At-risk learners have a greater opportunity for achieving success.
- Learning is more individualized, experiential, and relevant to the world outside of school.
- Learners take more responsibility for their own learning, behave more responsibly, participate in a variety of extracurricular activities and take leadership roles in the school and community, have better attendance and completion, and have a greater sense of belonging.
- Attributes include team teaching, integrated curriculum, multi-age grouping, cooperative learning, collaborative project work, and performance assessment.

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## Impact on Learning

- Learning outcomes are common for all learners.
- Learner achievement in small schools is at least equal and often superior to student achievement in large schools and in the attainment of education after high school.
- Learning achievement for ethnic minority learners and learners of low socioeconomic status is higher in small schools.
- Learners in small schools have a more positive attitude toward learning and have higher attendance and completion rates.
- Learners gain a deeper understanding and application of concepts.
- Learners in small schools participate at a higher level in extra-curricular activities. This participation has a positive impact on attitudes and social behavior.
- Learners and educators have a closer relationship, resulting in increased attention to the learner and educators demonstrating care.
- Learners in small schools have equal or higher preparation for entrance to higher education.
- Learning in small, rural schools is enhanced through the use of technology.

## Implications for New Designs

- Teacher pre-service and preparation programs need to address innovative teaching practices such as team teaching, curriculum design that integrates subject matters, multi-age groups, and peer tutoring.
- Learning needs to be organized to provide time for teacher planning and collaboration at the building level.
- Sufficient learning space needs to be provided for active learning practices.
- Learning staff need access to adequate materials and services.
- Learning staff development needs to address the isolation that can occur in small, rural schools.
- Learning staff need to be adequately compensated, especially to attract high quality educators to small, rural areas.

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## *Design Review No. 63*

## Prior Learning Assessment

### Definition

Prior Learning Assessment (PLA) is the process of documenting, identifying, and assessing learning that has been acquired outside the traditional classroom, for academic credit toward a credential or degree. Many institutions across North America have set in place policies and procedures to recognize such learning as acquired through professional and life experience, hobbies, military service, informal classes, or corporate training.

Some institutions consider transfer credit as PLA, although technically, it is not. Transfer credit denotes the awarding of credit for academic courses through a transfer or articulation agreement between two institutions. For transfer, credits are determined through administrative procedures, according to institutional course descriptions, with no interaction from the learner. Prior Learning Assessment denotes assessment through demonstration of learning.

### Key Features

Length of experience alone does not qualify for credit; rather, the *learning* from experience must be demonstrated through knowledge, skills, and abilities that meet the outcomes or standards set forth by the institution. The credit-granting institution develops its own specific criteria for administering PLA with the level of credit granted based on the outcomes of the assessment. Prior learning is assessed by specialists in the program area; normally, faculty members who instruct the courses. Methods of assessing learning include the following:

- **Challenge Exam:** Test or exam (usually written, but may be oral) that is designed to validate the knowledge of the candidate as it relates to course requirements. The challenge exam may be the actual test or exam given to students who formally attend the course. It includes questions that are directly related to the learning objectives of the course not to attendance in the classroom.
- **Standardized Test:** Test or exam focused around recognized standards (as set by a department or professional/licensing organization, not the assessor) that are equivalent to the course objectives. An example of a standardized test currently in use is the College Level Examination Program (CLEP).

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- **Portfolio/Products:** Documents or objects that have been produced by the learner and demonstrate tangible proof of accomplishment. These may include, but are not limited to, reports, computer printouts, videos, illustrations, prototype models, or an artist's portfolio. Some institutions require explanatory notes and a biographical narrative as part of the portfolio requirements.
- **Demonstration:** Simulation or actual presentation of candidate's abilities, which may be live, recorded, or videotaped. The demonstration may include, but is not limited to, such activities as presenting a speech, role-playing a situation, creating a document on computer, giving a musical performance, performing a lab experiment, or interviewing a client.
- **Interview:** The PLA interview is focused around course objectives and may include techniques such as open-ended questions, case studies, and prepared analyses. The interview is used to clarify areas of learning, and may be used in parallel with other methods, as a sole method of assessment, and/or as a means to ensure authenticity of products.
- **Worksite Assessment:** The learner is observed performing tasks as a part of normal work routine, or as specifically assigned, at the place of work. Assessment is normally made by faculty assigned to a learner, but may also be made by a work supervisor or field expert. If performed by an external assessor, the assessment may be followed up by a self-assessment and/or interview with a faculty assessor.
- **Self-assessment:** Assessment performed by the candidate, usually with the aid of an established form or questionnaire. This type of assessment typically requires a parallel assessment by a field expert and/or faculty assessor.
- **External Evaluation:** Assessment provided by an expert other than the institution's faculty. Assessment method may include—but is not limited to—performance evaluation, letter of validation, or worksite assessment, and may require follow-up by faculty.

### Impact on Learning

- Prior Learning Assessment recognizes that learning takes place outside the classroom, all the time, and that this learning is valuable and worthy of formal recognition through academic credit.
- PLA helps learners to recognize what they have already learned and offers guidance toward further learning goals.
- PLA also allows learners to focus on the courses they need to take, avoiding the time and cost of attending courses that provide knowledge, skills, and abilities they already possess.
- PLA may also be used to gain entry into higher-level training without first enrolling in the prerequisite courses and provides access opportunities for those who may not feel qualified for higher education.
- Learners can balance school, work, and life activities through more flexible learning and assessment practice.

### Implications for New Designs

- Governing bodies, using information presented by and endorsed by administration, need to adopt a policy supporting the granting of credit for prior learning.
- Administrators, in partnership with teachers and faculty, need to develop institutional policies and procedures for the assessment and awarding of PLA. These policies and procedures clarify the roles and responsibilities of all staff connected with the assessment and provide clear guidelines to both the learner and the assessor about timelines for completion.
- Course and program outcomes, expectations, and standards must be made clear, explicit, and easily accessible to the learner.

- Assessment methods must be appropriate for the subject or skill area, targeted to the learning objectives (competencies, skills, or outcomes), and able to reflect the level of achievement expected of any student.
- Staff need to understand and provide greater flexibility in assessment methods and procedures, which can then be applied to traditional courses as well as PLA.
- Staff may need training in flexible assessment methods and PLA, particularly with the portfolio method.
- Students may need to attend a portfolio development course or workshop to understand the requirements and expectations.
- The institution should make provisions for periodic review and evaluation of the PLA process.
- The institution needs to work collaboratively with receiving institutions and professional organizations / licensing bodies so that they will recognize the rigor and value of the process and accept credits awarded through PLA.

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Council for Adult and Experiential Learning (CAEL)
http://www.cael.org/Events/PLAWorkshops.asp
New Approaches to Lifelong Learning (NALL) http://www.fcis.oisc.utoronto.ca/~plar/
Open Learning Agency (OLA) http://www.ola.bc.ca/pla/

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## *New Designs for Career and Technical Education*
## *Design Review No. 64*

### Lifelong Learning

**Definition**

Lifelong learning implies that learning occurs in many different settings throughout life and beyond the traditional school years. It recognizes that many important learning influences are found outside the formal educational systems. Lifelong learning is viewed as an essential capability in people, the workforce, and society in order to compete successfully in a global, knowledge economy. It is a growing concept in this new economy and emphasizes the continuation of all forms of learning throughout life.

**Key Features**

Lifelong learning reflects and requires:

- Long-term view of work, family, and community; one that is not status quo, but that prepares for the future.
- Growing recognition and acceptance of this new philosophy of education and training and of the new roles and responsibilities for learning by the learners and the providers of knowledge.
- Seamless system for portability of credit and certification between institutions and with employers.
- Informal learning recognized and credited through Prior Learning Assessment (PLA).
- Foundations that are laid in the K-12 period of learning.
- Continuing and advanced education provided by employers, educational institutions, and community agencies.

**Impact on Learning**

- Individualized learning plans for all learners are becoming more common.
- Courses and programs are organized and offered at various times and places, and use a variety of delivery modalities to meet the needs of the learner.
- Portfolios that track accumulated skills, knowledge, and abilities are being used to demonstrate evidence of achievement in both the workplace and in learning institutions.

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- Learning expectations and outcomes need to be learner centered, but at the same time, learners need to be able to successfully meet federal, state, and local performance standards.
- The learning audience brings more diversity in terms of age, gender, race, ethnicity, education, and life experience.

**Implications for New Designs**

- Assessment and evaluation must be made independent of the context under which the learning occurs and a transparent transfer and articulation system must be established between and among institutions at a global level.
- Education and life opportunities must be made available to new and diverse types of learners in order to decrease the knowledge gaps between the *haves* and the *have nots*.
- Nationalization and globalization of standards for each profession or job would encourage transferability and portability of credentials.
- Articulation must be made available for credentialing and recognition by all institutions, businesses, and organizations.
- New forms of determining credits or completion of requirements need to be invented.
- System and staff must be structured to provide just-in-time curriculum development, delivery, and assessment.
- Staffing and staff development need to create opportunities for faculty and teachers to learn to design their instruction differently, to teach differently, and to provide flexible assessment.
- Improved relationships and connections between schools, colleges, business, industry, and communities are needed to facilitate lifelong learning.
- Learners need a network of support centers, communities, resources, advising, and training in the preparation of portfolios.

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**Learning Organization**

Kerka, S. (2000). *Career academies*. Columbus, OH: National Dissemination Center for Career and Technical Education. (In Brief No. 1).

Career academies: (a) organize learning as a school within a school; (b) place learners in a cluster with the same teachers for a two- to four-year period to form a learning community; (c) create partnerships with business to provide career awareness, work-based learning, and provide resources; and (d) integrate academic and occupational curriculum. These strategies tend to result in better academic performance, student development, preparation for college and work, and successful employment.

Kerka, S. (2000). *Career certificates: High quality and cutting edge?* (Trends and Issues Alert No. 19). Columbus, OH: Center on Education and Training for Employment. (ERIC Document Reproduction Service No. ED440299).

As new careers and knowledge emerge, jobs and organizations change quickly, and working lives become longer, certificates are sought to document attainment of skills and knowledge. Certificate programs offer focused, flexible, interdisciplinary, and highly relevant educational opportunities to seek new knowledge and careers or to upgrade current skills while accommodating personal needs and learning styles.

Schwartz, W. (1996). *How well are charter schools serving urban and minority students?* (Report No. EDO-UD-96-7). New York, NY: ERIC Clearinghouse on Urban Education. (ERIC Document Reproduction Service No. ED410322)

The creation of charter schools began because people were feeling the constraints of conventional public schools negatively impacting the quality of learning. Urban areas see the largest growth in charter schools due to overcrowding and lack of resources. Charters are created and managed by parents and teachers who design the curriculum and learning processes, and determine the nature of the student body. Federal law stipulates that charters receiving federal funding must adhere to civil rights statutes and that all students be given the opportunity to attend the school. Themes are often used in the creation of the school and focus of the curriculum (e.g., environmental studies, mathematics and science academy, tricultural and trilingual education). Very often, charter schools employ a higher level of technology in the delivery of instruction.

## *New Designs for Career and Technical Education*
## *Design Review No. 65*

### Partnerships with Business and Industry

**Definition**

Partnerships between community colleges and business and industry are designed to enhance the quality and relevancy of education. Types of partnerships include:

- *Advisory committees* include representatives from government, business, public and community agencies, and public schools. They support a college's efforts to keep curriculum current and responsive to the needs of the community and students.
- *One-to-one institutional partnerships* where the needs of one college or one business are the impetus for the partnership. Learners benefit through scholarships, increased incentives for completion, and opportunities to learn about the real-world application of knowledge and skills. Colleges benefit by receiving guidance for curricular design, faculty internship opportunities, and donations of up-to-date equipment. Businesses benefit by having access to a skilled workforce, a local training provider, and the opportunity to be philanthropically involved in the community. Partnerships can be targeted to respond to a specific problem or issue (Lankard, 1995; The Conference Board of Canada, 2001).
- *Cooperative agreements* are more complex, have broader benefits, and represent an expansion of one-to-one partnerships. All members of the partnership identify and accept compatible goals and strategies for improving specific aspects of education, share responsibility and authority, are equal partners in the project, and have a mutual commitment.
- *Comprehensive collaboratives* include a broader approach than the cooperative agreement and require a long-term commitment on the part of the partners. The services provided address a broader array of issues, and include the integrated delivery of multiple services and cross-institutional activities.

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**Key Features**

- Partnerships benefit all members when based on clearly defined expectations, shared objectives that support the goals of the partners, and measure and evaluate both the performance of learners and partners to make informed decisions that ensure continuous improvement.
- Partnerships with business and industry provide opportunities for the community college to be at the center of community development. The community college has improved access to new technology, increased student retention, and increased public support for education.
- Partnerships developed with business and industry meet a variety of community needs by providing employee training, economic development, school-to-work/tech prep, lifelong learning, international trade and development, job placement, and welfare to work programs.
- Partnerships provide the opportunity for learners to access up-to-date technology and equipment and the ability to apply knowledge in a work-based setting.

**Impact on Learning**

- Learning experiences are made more authentic by integrating curriculum, providing new sources of knowledge, and leading to a smoother transition from education to work, family, and community.
- Learning achievement is enhanced through access to up-to-date technology and equipment.
- Learning outcomes are linked to current industry skill standards and workplace expectations.
- Teaching experiences are enhanced through faculty internships at industry sites that provide access to current and future technology and assistance to create relevant curriculum.

**Implications for New Designs**

- Partners must treat fairly and equitably all those served by the partnership.
- A successful partnership depends on the ability of the college to act in non-traditional ways (Gruber, 2000).
- Colleges should consider many options for partnerships, rather than limiting their choice to one approach.
- Resources should be allocated so as to complement, not replace, public funding for education.
- Partners must clearly define roles and responsibilities for each partner.
- Partners must demonstrate a willingness to engage in an intensive curriculum development process, adapt curriculum to meet employer needs, and reflect the workplace.
- Program delivery should fit with time and place needs of the employer and workers (Gruber, 2000).
- The development of a successful partnership will likely include long and difficult negotiations that will require a strong commitment from all partners.

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## *New Designs for Career and Technical Education*
## *Design Review No. 66*

## Coordinating School-Based and Work/Community-Based Learning

### Definition

Work-Based Learning provides a learning opportunity through which students learn, develop, and apply academic and vocational skills in a workplace context to address the real life needs of their local communities. This experience, which may be paid or unpaid, is also known as community-based learning, service learning, experiential learning, cooperative education, on-the-job training (OJT), and apprenticeship, according to which aspect of the experience is emphasized.

Jobs in the future will require more and a different type of education that includes critical thinking, teamwork, and the ability to apply knowledge. The goals of work-based learning include the attainment of academic, career, and vocational outcomes, as well as personal-social development, work values, understanding and use of community resources, civic responsibility, and ethical development.

### Key Features

- Involvement of the family, business, labor, the community, and other agencies.
- Integration of knowledge, skills, and abilities learned in school applied to authentic situations to prepare students for employment skills in the workplace.
- Development of the attitudes, values, and behaviors that lead students to become informed citizens and productive workers.
- Opportunities provided for active and self-directed learning, as well as new roles and responsibilities.
- Ongoing emotional and motivational support from adults and peers, and future access to strategic support services and social networks.

### Impact on Learning

- Relates to the changing nature of society, the learner, the learning processes, and sources for learning.
- Contextualizes the learning experience to real-world needs.

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- Actively engages the learner in the learning process.
- Provides an environment in which learners can acquire organizational, team, problem-solving, and other skills, attitudes, and capabilities necessary for future work and learning.
- Supports vocational and career development outcomes and connects learners to their communities.
- Creates need for teachers and faculty to learn how to adapt their knowledge base and assessment practices to work-based learning; provide mentoring and modeling; and integrate authentic activities in the classroom.

## Implications for New Designs

- Staffing and staff development opportunities need to be created for faculty and teachers to learn to design and teach their instruction differently and to use flexible methods of assessment.
- Orientation, training, and ongoing support must be provided to workplace and school staff.
- Time and staffing must be provided to identify appropriate work-based sites and to create, monitor, and support supervisor/mentor activities.
- Relationships and connections between schools, colleges, business and industrial communities, and professional organizations need to be created and strengthened to facilitate recognition and awarding of credits, certification, and transferability to other institutions.
- Networks of ongoing support, advising, and counseling for learners need to be created.

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## *New Designs for Career and Technical Education*
## *Design Review No. 67*

### Articulation: 2+2+2

### Definition

The 2+2+2 initiative is designed to attract high-school students to a technical education pathway that will lead from high school to associate degree programs to baccalaureate programs. This pathway is made seamless by reducing duplication of effort by the learner and the learning providers. Credit is granted to the learner based upon articulation agreements between the learning providers or through demonstration of knowledge and skill competency.

### Key Features

The following are key features of a 2+2+2 articulation agreement between learning providers:

- Provides coherence, coordination, and articulation that produce a more effective and productive educational system and expand opportunities for student academic success.
- Offers a streamlined curriculum that eliminates duplication of course work and results in a smoother transition from one educational level to another.
- May provide college credit while the learner is still enrolled in high school.
- Provides a clear understanding of standards and transfer processes.
- Creates a collaborative partnership between institutions focused on a collective vision of educating learners rather than learner-by-learner decisions about transfer of credit.
- May include an "upside-down" plan under which the vocational segment of the baccalaureate program is handled by the four-year institution and the general education portion is handled by the community college.
- Embodies flexible pacing and articulation between the high school, community college, and four-year institution.

### Impact on Learning

- Encourages students to continue their studies at the post-secondary level.
- Allows students to interrupt their education with periods of full-time employment without detriment to their educational program.

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- Permits students to gain confidence and achieve higher education goals.
- Increases student retention by allowing students to accumulate college credits, prepare for community college enrollment and subsequent transfer to a four-year institution.
- Helps faculty at all three levels to benefit from resolving issues such as competency levels, credit transfer, and expected mastery of material.
- Builds trust through enhanced communication among students, faculty, counselors, and administrators at participating institutions that opens collaboration and broadens knowledge of each other's programs.
- Results in program and curriculum improvements, where standards and expectations for student performance are communicated among faculty, advisors, and students at all three levels.

## Implications for New Designs

- It takes more effort, time, and stress than most educators expect in order to meet 2+2+2 goals. The negotiations preceding the formal agreements between educational institutions are complex, labor intensive, and time consuming.
- Total commitment to success by all participants is essential to overcome inherent obstacles.
- Sufficient financial support must be marshaled to ensure that 2+2+2 is institutionalized and does not rely on special project funds that are apt to run dry.
- Institutions tend to resist initially. Trust is necessary to develop more flexibility and to relax traditional concept to allow for innovation.
- Curriculum changes at all three levels should be expected.
- Traditional educational boundaries should be reassessed; barriers to student transitions must be identified and eliminated.

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## *New Designs for Career and Technical Education*
## *Design Review No. 68*

### Middle College High School

**Definition**

The middle college high school is a high school program on a college campus designed to serve students with college potential whose needs are not being met in a traditional high school setting.

**Key Features**

- Combines the resources of a high school and a college to create a collaborative structure that promotes academic engagement.
- Offers curriculum in a flexible, open, and challenging environment that includes basic courses for high school graduation in the college preparatory track—supplemented by college courses and high school electives, academic and career counseling, and job-related internships and work experience.
- Focuses on interdisciplinary instruction, teaches skills in context, and stresses collaborative learning strategies in which students interact to master material and prepare projects.
- Provides learning communities that focus on issues, practices and relationships that result in improved student achievement and personal growth; cultivates collegial relationships between high school and college faculty; and encourages students to become global citizens and lifelong learners.
- Transforms the traditional high school into a more intimate and supportive environment where there is closer rapport among teachers, administrators, and students.
- Embodies flexible pacing and articulation with the high school through the use of the college site and in the sharing of courses with the college.
- Develops a strong connection identification with a community of learners.

**Impact on Learning**

- Classroom methodology stresses collaborative strategies in which students interact to master material and prepare projects, changing learners from passive recipients to active participants in the learning process.

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- Redirects students with high potential who have not lived up to perceived expectations and academic potential.
- Increases student motivation through engagement in authentic, project-based learning.
- Improves student attendance, academic achievement, and high school graduation rates by allowing students to accumulate college credits and prepare for early college admission.
- Improves communication and technical skills through interdisciplinary studies and exposure to various learning modalities.
- Connects students to the next stage of their development through college's organizational structure, environment, and curriculum.
- Increases maturity, independence, and evidence of coping skills through immersion in the college environment, being treated like college students, and with reduced class sizes.
- Team teaching provides the teachers with opportunities to work collaboratively in the classroom, to develop the skills for cooperation, and to be role models of effective collaboration.

**Implications for New Designs**

- Middle college high schools need to offer small classes in an environment that is supported with academic and career counseling and job/volunteer experiences.
- School officials need to ensure that students receive both college and high school credit for college courses.
- The middle college high school needs to be placed on a college campus.
- The successful middle college high school will operate as a partnership between the high school, college, and representatives from business and industry.
- Students must be allowed to fully participate in college life.
- Courses should be designed to capitalize on the adolescent tendency to work with peers and to be motivated by quick results and by issues relevant to their lives and interests.

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## *New Designs for Career and Technical Education*
## *Design Review No. 69*

## Partnerships of High Schools and Community and Technical Colleges: Tech Prep

### Definition

Tech Prep provides a high-level academic and technical preparatory education linking high school and post-high-school learning experiences. These experiences prepare learners to enter the career field of their choice or to pursue a two-year program at the community/technical college level.

### Key Features

- Integrates academic skills into vocational programs and implements applied methodologies in academic classes.
- Provides students with a high level of academic and technical skills to enter the career field of their choice and offers worksite learning experiences to obtain occupational-specific training (Hull & Parnell, 1991).
- Teaches more general employability skills needed for the competitive workforce of the 21st century. These skills are learning to learn, transferring skills to new situations, and embracing flexibility.
- Focuses on emerging workforce needs and creates partnerships among schools, colleges, and employers to ensure program offerings are in concert with these needs and ensures consistency of the curriculum (Cantor, 1999).
- Articulates high school and post-secondary educational programs to create a smooth transition from high school to college and increases retention due to the relevancy of the programs.
- Links school-based knowledge to the broader context of family, work, and community life (Bragg, 1994).

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### Impact on Learning

- Empowers students to understand the purpose and value of education.
- Redirects students who would otherwise be enrolled in unfocused general education courses into more focused programs based on their interests and goals (Hull & Parnell, 1991).
- Prepares high school students to emerge well prepared for post-secondary technical education and technical careers.
- Focuses curriculum on learning outcomes and the ability to thinking critically and creatively.
- Uses authentic and performance-based assessments and promotes continuous improvement as a top priority of program evaluation (Bragg, 1994).

### Implications for New Designs

- Curriculum and programs need to be integrated vertically across disciplines and horizontally within programs (Bragg, 1994).
- Postsecondary educational opportunities must be accessible to all students.
- Tech Prep consortia need to create partnerships with educators, students, parents, employers, community agencies, and local citizens who have a shared responsibility for implementation.

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Hull, D., & Parnell, D. (Eds.). (1991). *Tech prep associate degree: A win/win experience.* Waco, TX: The Center for Occupational Research and Development.

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## Learning Partnerships

Kerka, S. (2000). *Parenting and career development* (Report No. EDO-CE-00-214). Columbus, OH: Center on Education and Training for Employment. (ERIC Document Reproduction Service No. ED440251).

Close relationships with parents or adult caregivers provide the needed security to explore careers, establish career goals and choices throughout life, and create career self-efficacy. These relationships also transmit values about work, decision-making, work habits, conflict resolution, and communication skills. These findings suggest that it is beneficial for career counselors and educators to develop parent involvement in school and focus on the family system.

Lumsden, L., & Hertling, E. (2000). *Trends and issues: Relationship with the community.* Eugene, OR: College of Education, University of Oregon.

Business-community-education partnerships allow schools, businesses, communities, and schools to stay vital in a rapidly changing world and to achieve goals that would be difficult or impossible without such an alliance. Research shows that these partnerships increase retention in schools, improve graduation rates, and increase pursuit of postsecondary education.

# Design Reviews for the Learning Staff and Staff Development

## *New Designs for Career and Technical Education*
## *Design Review No. 70*

### Staffing and Staff Development*

**Definitions**

The learning staff is defined to include all those who are involved in the teaching and learning process. The learning institution recognizes and supports the contributions and interdependence of each of the categories and individuals of the learning staff.

Learning staff development addresses informal and formal activities that provide the knowledge and competencies to lead and engage in the multiple roles and responsibilities of a learning institution.

**Learning Staff**: Learning staff includes:

- Teachers/faculty
- Counselors
- Administrators
- Program support staff
- Facilities staff
- Paraprofessionals
- Aides
- Mentors
- Volunteers
- Advisors
- Board members/trustees
- Family
- Learners

**Knowledge and Competencies Needed by the Learning Staff**

The competencies needed include:

- Individually and collectively model the learning expectations that learners are to achieve,
- Ensure that each learner is known, including prior learning and life experiences, and is served well through integrated support services,

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*Copa, G. H., Plihal, J., with Birky, G., & Upton, K. (1999) *New designs for staffing and staff development for secondary and postsecondary education.* Berkley, CA: National Council for Research in Vocational Education. Supported by the Office of Vocational and Adult Education, U.S. Department of Education.

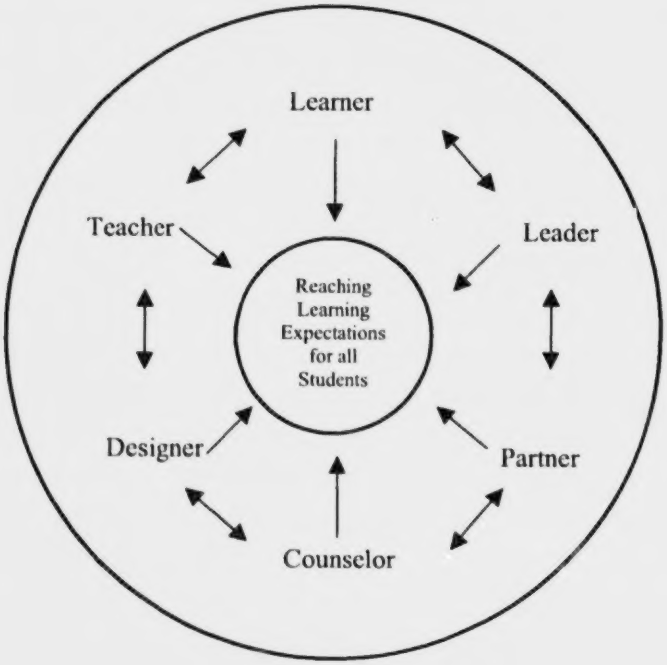
This Design Review was prepared by Susan J. Wolff, Ed. D. for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

This design review was prepared as part of the project, New Designs for Career and Technical Education at the Secondary and Postsecondary Levels, which is a part of the program of work for the National Research Center for Career and Technical Education headquartered at the University of Minnesota and funded by the Office of Vocational and Adult Education in the U.S. Department of Education, PR/Award (No. V051A990006.) However, the contents do not necessarily represent the positions or policies of the Office of Vocational and Adult Education or the U. S. Department of Education, and you should not assume endorsement by the Federal Government. This project was directed at Oregon State University, a partner institution in the National Center. The Project Director is George H. Copa, Professor, School of Education, Oregon State University, Corvallis, Oregon. For more information, see the website for New Designs for Learning at Oregon State University at http://newdesigns.orst.edu. This design review is part of a larger series of reviews presented in the report: Wolff, S. J., & Copa, G. H. (2003). *New designs for career and technical education at the secondary and postsecondary levels: Compendium of design reviews of related research, policies, and exemplary practices.* Minneapolis, MN: National Research Center for Career and Technical Education, University of Minnesota. The full report is available on the above website.

- Enable learners to construct knowledge through the use of project-based learningand integrated subject matters, and by linking school-based learning with community-based learning,
- Demonstrate just-in-time, formal and informal learning through flexible, resourceful, and innovative learning experiences that are responsive to the needs of the learner,
- Demonstrate, if appropriate, competency in a subject-matter area through the ability to design and deliver learning experiences,
- Build learning communities using skills in organizing and leading teams, understanding and valuing diversity, establishing trust, balancing freedom and responsibility, being supportive, and creating and maintaining a positive attitude.
- Handle multiple roles to contribute to the learning experience in a variety of ways.
- Identify, establish, and maintain collaborative partnerships with others inside and outside of the learning institution to enhance the learning experience.
- Take the initiative to provide leadership for learning, to seek opportunities, and to resolve problems in creative and innovative ways.
- Value diversity of learners and partners.
- Operate as information navigator to effectively select, design, and make use of technology and information systems and guide others in doing the same.
- Lead in and apply continuous quality improvement to the learning experience by identifying learning expectations, assessing performance on a continual basis, and by recognizing and rewarding achievement of the learning expectations.
- Recognize the value of lifelong learning for all staff and that it is a shared responsibility of the individual and the institution; value and contribute to regular assessment of their responsibilities and practice; participate in renewal opportunities; and commit resources for staff development.

The conceptual framework in which the competencies of teacher, learner, leader, partner, counselor, and designer is illustrated in the Figure below.

**Roles and Responsibilities for Learning Staff in the Context of New Designs for Learning.**



**Staff Development**

Design specifications for effective staff development are as follows:

- Demonstrates and models the knowledge and skills expected of the learning staff.
- Includes all staff.
- Integrates with the operation of the institution by being closely coordinated, coherent, and embedded in the mission, vision, needs, values, priorities, plans, and constraints of the institution; is modeled in the institution's leadership; and is accessible when and where needed.
- Promotes sharing and collegiality among staff.
- Involves all staff in identifying needs, planning learning experiences, and assessing results.
- Attends to the special needs of the staff who are new, with new responsibilities, or leaving the institution.
- Includes formal and informal learning experiences.
- Supports innovation and experimentation.
- Renews and sustains the energy of the staff.
- Attends to individual, group, and team learning.
- Provides funds, times, and space.
- Is on-going, up-to-date, and research-based.
- Includes a variety of sources.
- Provides incentives for learning.
- Improves performance of the staff.
- Uses continuous quality improvement.

**Implications for New Designs**

- Think beyond the typical categories of staff and recognize their interdependence.
- Think beyond the typical competencies of staff.
- Think beyond the typical framework for staff development.
- Consider the interdependence of staffing and staff development with other New Designs elements.
- Consider the interdependence among the categories of staff.
- Consider the criticality of staff development.
- Identify learning products and projects that lead to developing and exhibiting the performance implicit in the competencies required of learning staff.
- Design learning environments that lead to effective and efficient development of the competencies required by learning staff.

## *New Designs for Career and Technical Education*
## *Design Review No. 71*

## Designing Staff Development for the Improvement of Student Learning

### Definition

Staff development efforts in learning institutions can focus on a variety of areas. These areas typically include learning new professional and technical knowledge and skills, orienting new employees, training for new positions within the institution, involving and assisting staff through organizational changes, training to meet new standards or performance measures, and responding to learner needs.

When planning staff development around improving student learning, the focus is on what learners are expected to know, are able to do, how this learning will be assessed, and how the achievement of the learning expectations will be documented.

### Key Features

Effective staff development programs that link to student learning:

- Begin with the end results in mind.
- Provide sufficient time for teachers and staff to plan, practice, produce, and assess effective teaching and learning practices. Seek and use learner performance data to determine and to link to staff development content.
- Develop multiple methods for assessing learning performance.
- Provide on-going demonstration and coaching opportunities for new staff or those seeking new knowledge and skills.
- Create sustainability through on-going staff development that occurs over a long period of time; i.e., months or even years
- Respond to rapidly changing learner demographics and needs.

This Design Review was prepared by Susan J. Wolff, Ed. D. for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

This design review was prepared as part of the project, New Designs for Career and Technical Education at the Secondary and Postsecondary Levels, which is a part of the program of work for the National Research Center for Career and Technical Education headquartered at the University of Minnesota and funded by the Office of Vocational and Adult Education in the U.S. Department of Education, PR/Award (No. V051A990006.) However, the contents do not necessarily represent the positions or policies of the Office of Vocational and Adult Education or the U. S. Department of Education, and you should not assume endorsement by the Federal Government. This project was directed at Oregon State University, a partner institution in the National Center. The Project Director is George H. Copa, Professor, School of Education, Oregon State University, Corvallis, Oregon. For more information, see the website for New Designs for Learning at Oregon State University at http://newdesigns.orst.edu. This design review is part of a larger series of reviews presented in the report: Wolff, S. J., & Copa, G. H. (2003). *New designs for career and technical education at the secondary and postsecondary levels: Compendium of design reviews of related research, policies, and exemplary practices.* Minneapolis, MN: National Research Center for Career and Technical Education, University of Minnesota. The full report is available on the above website.

## Implications for New Designs

- Include staff development opportunities that focus on strategies for developing strategic partnerships with business, industry, community, and other learning providers.
- Offer staff development opportunities designed for staff using active learning processes and designing and offering integrated courses and programs.
- Provide opportunities for staff to learn effective use of technology to enhance the learning experience.
- Include continuing education in content areas as well as classroom management practices.
- Offer programs to increase multicultural awareness and to understand the importance of the demographic make-up of learners.
- Link staff development opportunities to licensing, professional accreditation, or degree requirements.
- Provide adequate funding for staff development and develop performance measures and accountability standards to ensure the opportunities are linked to increased learner performance and to the institution's mission, vision, and goals.

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## *New Designs for Career and Technical Education*
## *Design Review No. 72*

## Skill Standards for Professional-Technical Community College Instructors and Customized Trainers*

### Definition

Professional-technical college instructors and customized trainers of the 21st century are more than content specialists or practitioners of previous occupations. They teach in a knowledge-based economy to diverse learners with multiple needs and expectations and require a different preparation than offered in previous vocational instructor development. Professional-technical faculty must now "be computer literate, software smart, and people sensitive" (Goldstein, 2000, p. 3).

The State of Washington Vocational/Technical Council (VTC) received funding and support from the Washington State Board for Community and Technical Colleges through School-to-Work Opportunities Act dollars to develop statewide skill standards for professional-technical faculty and others. The development of these standards was based upon the National Skill Standards Board guidelines. The skill standards connect selected industries to the world of academia by "informing an instructor's artistic development of curricula, learning activities, and assessment by providing industry voice to the process, expectations for skill development, and standards for skill performance" (Goldstein, 2000, p. 2).

### Key Features

Components of skill standards for teaching that address novice teacher, experienced newcomer, newly tenured professor, and senior faculty member levels are:

- **Critical work functions**–General areas that a first-year, fully competent, professional-technical instructor or trainer would perform.
- **Activities** – Measurable and observable tasks related to critical work functions.

*Goldstein, N. (2000). *Skill standards for professional-technical college instructors and customized trainers.* Seattle, WA: Consolidated Press. Project administered by the Washington State Board for Community and Technical Colleges with funding through the School-to-Work Opportunities Act.
This Design Review was prepared by Susan J. Wolff, Ed. D. for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

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- **Level of importance**–Each critical work function and activity is rated as important, very important, or critical.
- **Performance indicators**–Demonstrated evidence of a worker's achievement of skills, knowledge, and tasks.
- **Technical skills, knowledge, abilities, and tools**–Areas of expertise needed to perform a given occupational task with excellence.
- **Employability skills**–Basic academic and personal skills needed to build more advanced competencies required to obtain meaningful work and participate in the modern workforce.

The Skill Standards identify the following critical functions to be performed by professional-technical college instructors and customized trainers:

- Manage learning environments.
- Develop curricula, outcomes, and assessments.
- Develop and review programs.
- Provide student instruction.
- Provide support and guidance to students.
- Perform administrative functions.
- Create and maintain a professional environment.
- Promote the program and recruit students.
- Learn and adapt new technologies.
- Perform program management functions.

## Impact on Learning

Community college faculty and customized trainers who have become trained in these Skill Standards impact learning by:

- Partnering with business and labor in developing school-to-work opportunities.
- Providing direct instruction targeted to specific industries.
- Developing benchmarks for student achievement.
- Incorporating workplace terminology, standards, and expectations into the curriculum and learning experiences.
- Developing assessment to evaluate knowledge, skills, and abilities for direct instruction, work-based learning, and internships.
- Providing career guidance and direct links to potential employers.

As a result of the Skill Standards development for professional-technical community college instructors and trainers, some higher education institutions are incorporating the following areas into teacher preparation programs:

- The constructivist theory of teaching and learning.
- Service learning as a teaching pedagogy.
- Civility and ethics outcomes for all learners in all content areas.
- Conducting and facilitating research.
- Grant writing.
- Public relations and marketing.
- Use of technology in teaching.
- School-to-career linkages.

## Implications for New Designs

- Assist in career choices by providing industry expectations for success.

- Develop and sustain business and industry partnerships to keep standards current and evaluate effectiveness of programs and collaborative efforts.
- Hire faculty and trainers who can adapt curriculum and teaching processes to adjust to rapidly changing skill and employment requirements.
- Create understanding of lifelong learning for all.
- Provide staff development and training opportunities for faculty and trainers in the areas of working and theoretical knowledge of learning theory, diversity, technology, and short-term and long-term curriculum design.
- Incorporate the use of technology to access global information and remain current, expand student learning and contact with other learners, and increase access to learning.

- Develop a comprehensive system of outcomes, teaching and learning methods, integrate technology with content and context, and use appropriate methods for assessment.
- Use skill standards to evaluate effectiveness and accountability of programs and as a basis for educational reform.

## *New Designs for Career and Technical Education*
## *Design Review No. 73*

## State Leadership Development for Career and Technical Education

### Definition

Educational leadership will be turning over at an alarming rate in the next 10 years. Nearly 45% of community college presidents will be retiring in the next six years with another 34% expected to retire in the next seven to 10 years (Evelyn, 2001). What makes this trend even more alarming is the equally high rate of expected retirements for mid-level managers who would normally be available in the labor pool for executive level positions. Additionally, between one-fourth and one half of community college faculty will also be retiring. Traditionally, mid-level managers came from faculty ranks. Further exacerbating the situation is the increasing complexity of leadership positions in community colleges and at the K-12 level. The long-standing pipeline for leadership development is closing and there are not enough educational leadership development programs available to fill the gap.

Educational leadership preparation for career and technical education (CTE) programs is especially lacking. Historically, the Education Professions Development Act (EPDA) passed in 1967 provided leadership opportunities for teachers and teacher educators. Amendments in 1968 created two goals for vocational educators: (a) to develop a cadre of vocational education leadership personnel to meet the needs of all the state equitably; and (b) to promote the development of comprehensive graduate programs in vocational education to train the needed leadership personnel. The end of this legislation stopped funding for preparation of vocational education leadership.

According to Kister (2001), "the context for career and technical education, situated in the worlds of educational improvement, workforce development, and economic development, is complex, global, and changing at an exponential rate" (p. 1). The ability to attract leaders to career and technical education is negatively impacted by increasing responsibilities and expectations coupled with funding and staff reductions. Strong state leadership is necessary for strong career and technical education programs (Kister, 2001).

This Design Review was prepared by Susan J. Wolff, Ed. D. for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

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**Key Features**

Current roles and responsibilities of career and technical education state leaders according to Kister (2001) are:

- **Policy**–Developing standards for CTE and preparing budget, information, and policy recommendations to state boards and legislatures.
- **Program design**–Analyzing labor market data, developing program standards based upon academic standards and industry credentials, and developing models for delivery.
- **Curriculum, instruction, and assessment**–Developing and promoting curricula, and providing technical assistance to school districts and institutions to improve quality of curriculum, instruction, and assessment.
- **Professional/staff development and teacher education**–Providing quality professional development and staff training for local CTE staff and state staff, and collaborating with teacher education institutions.
- **Evaluation, accountability, and reporting**–Developing, implementing, and maintaining state performance accountability; overseeing local district accountability; evaluating state and local programs; developing and maintaining data systems; and preparing state and federal reports.
- **Strategic planning**–Developing a strategic plan for CTE, coordinating agency plans, and developing state plans required by federal legislation.
- **Monitoring**–Ensuring required monitoring of local school districts and institutions.
- **Management of the organization**–Managing fiscal and personnel resources.
- **Public information and marketing**–Providing public information, responding to media, and promoting programs.
- **Collaborations**–Developing collaborative relationships with academic units, secondary and postsecondary institutions, business and industry, and agencies responsible for workforce development.
- **Student organization**–Advocating for and overseeing management of CTE student organization.

**Impact on Learning**

CTE leader roles that have direct impact on learning include:

- Integrating CTE into the total mission of education and education reform.
- Leading CTE into a mainstream educational choice for all students.
- Aligning a PreK-16 continuum to meet postsecondary education articulation and employment requirements.
- Implementing new strategies for organizing instruction (e.g., career academies, magnet schools, career pathway schools, career clusters).
- Hiring teachers and faculty with content expertise and ability to teach and assess in multiple ways.
- Providing time for teachers and faculty to revise curriculum and delivery methods.
- Aligning CTE standards with state academic standards and performance measures.
- Linking academic standards to CTE courses, applied coursework, embedded credit for academics, and new courses of study emphasizing academics and tech prep.

**Implications for New Designs**

- Design CTE programs that are available to all learners and meet diverse needs.
- Build strong partnerships with workforce, economic development, and educational leaders.

- Develop strategies and partnerships for providing leadership development opportunities for current and potential staff and organize time in a way that supports and rewards leadership development.
- Emphasize certification of secondary and postsecondary CTE programs and instructors.
- Implementing the use of technology for delivery of instruction, staff development opportunities, and increasing efficiencies in processes and procedures.
- Provide multiple staff development opportunities for attracting, retaining, and promoting teachers, faculty, and staff.
- Incorporate racial and ethnic diversity in staffing and operating procedures.
- Take lead role in state and federal legislative policy issues and directions, including CTE leadership development.
- Work with higher education institutions to create or continue to offer educational leadership programs with an option for CTE leadership development.
- Institute strong and valid accountability systems.
- Seek creative and sustainable funding sources.

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## *New Designs for Career and Technical Education*
## *Design Review No. 74*

### Learning Teams

**Definition**

A learning team is usually made up of four to seven learners with complementary skills, committed to common performance goals, and for which they hold themselves accountable. Learning teams learn in the context of cooperative and collaborative learning.

**Key Features**

- Members of the team are charged with seeing to it that all members succeed.
- Members assume the role of peer teachers and learners.
- Members use their diverse areas of expertise to contribute to a high quality product that far exceeds the capability of any individual member.
- Members collaborate on carefully designed, complex, and demanding assignments requiring the efforts of all.
- Learning teams create the environment and the means to develop learning activities and tasks.
- Learning teams are formed by the teacher/mentor and are heterogeneous based on aptitude of material, experiences, learning styles, and the team members' schedules and availability to meet outside of class time.
- Learning teams are given training before and during the learning experience of how to work in a team and work collaboratively to meet a common goal.
- Members learn to conduct meetings, manage conflict, and deal with difficult team members.

**Impacts on Learning**

- Learning is more effective and stays within the memory longer when it is transformative—where the learner takes the information, applies it, receives feedback, and has had adequate coaching from a mentor.
- Learning is better facilitated when it actives prior knowledge, gives contextual clues, and requires production of a product or service.

This Design Review was prepared by Susan J. Wolff, Ed. D. for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

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- Assessments occur throughout the process and measure the improvement of individual mastery of the material, the quality and complexity of the work, and the ability to work collaboratively in teams.
- Adequate time needs to be given to the learning teams during the structured portion of the learning experience and outside times need to be facilitated and scheduled.
- Careful planning needs to occur for the composition of the teams, assessment policies and procedures, and learning activities.
- Assessment is weighted more heavily on team performance.

## Implications for New Designs

- Staff need to know and understand different learning styles and the advantages and disadvantages of each.
- Staff need training on collaborative, team-based learning processes, implementing learning teams, and assessment of team learning activities and projects.
- Staff need to develop ways to get to know their learners in more depth relating to their existing knowledge, experience, and interest.
- Staff need additional time to prepare for, monitor, and assess learning teams and activities.
- School or college leaders and staff need to establish effective partnerships with business, industry, community, and other learning providers to actively engage with the learning teams.
- Learning (time) schedules need to be constructed for flexible learning experiences.
- Learning facilities need to be designed to support and enhance team learning. This includes space for individual, small group, large group, project work, and presentation space with ready access to resources and information.

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## *New Designs for Career and Technical Education*
## *Design Review No. 75*

### Part-time/Adjunct Faculty

### Definition

Part-time faculty members are those faculty who work less than full-time, generally on a term-to-term contract, usually receiving no health and/or retirement benefits from the educational institution, and commonly not eligible for tenure. These faculty members are referred to as "part-time," "contingent," or "adjunct," and due to their status in the academic community, are often compared to migrant farm workers (Cohen & Brawer, 1996; Wolfe, 1997). Part-time faculty members are usually hired specifically to teach and are generally not required to hold office hours, attend college committee meetings, or participate in other non-teaching activities.

### Key Features

- Part-time/adjunct faculty members comprise nearly two-thirds of faculty teaching in two-year colleges in the United States (National Center for Educational Statistics, 2001). The percentage of part-time faculty has steadily increased and expectations are that this trend will continue.
- Faculty teach part-time for myriad reasons: to gain experience while pursuing full-time teaching positions, to bring specific expertise to the college curriculum, to supplement other income, or as a second career (Gappa & Leslie, 1993).
- Colleges hire part-time faculty to respond to fluctuations in enrollment and changes in student demand for courses, provide organizational flexibility, add specific expertise, and contain/reduce instructional costs (Haeger, 1998; Jacobs, 1998; Tolbert, 1998).
- Part-time faculty members have similar characteristics to full-time faculty, but encounter working conditions that are markedly less desirable than full-time colleagues (Cohen & Brawer, 1977; Gappa & Leslie, 1997; McNair, 2002).

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**Impact on Learning**

- Students are able to work with faculty who are also working in the field.
- Colleges may be able to respond to changes in student demand for courses.
- Faculty members who are teaching at more than one campus are often able to spend less time on each campus interacting with colleagues and students outside the classroom (McNair, 2002).
- While contingent faculty make it possible for full-time faculty to teach courses of their choosing and participate in the academic community, those same opportunities are often denied contingent faculty (McNair, 2002).
- Current academic structures often reinforce inequality, deny dignity, and limit recognition of part-time faculty members, thereby restricting their ability to participate in/contribute to the academic community.
- Part-time faculty often face pressure to remain unobtrusive in the workplace.

**Implications for New Designs**

- Structures that privilege one group over another result in silencing those without privilege; therefore, colleges need to redesign concept of academic community, including faculty roles.
- Given the different aspirations of faculty, faculty roles that are "time-based" no longer fit today's college (Gappa, 2002).
- Young faculty members with families as well as older faculty nearing retirement are seeking more flexible work arrangements (Leslie & Walke, 2001).
- Not all faculty members may be interested in greater engagement with the academic community; however, those who are need opportunities to participate more fully (McNair, 2002).
- Part-time faculty members often rely primarily on the department chair to understand and negotiate their work environment (McNair, 2002). It is critical to examine the role of the department chair in light of this reliance as well as expectations from full-time faculty and college administrators.
- Colleges need to develop models to measure the total cost of hiring part-time faculty, including salary, benefits, transactional costs, orientation, training, and opportunity costs (Gappa & Leslie, 1997; McNair, 2002).

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## *New Designs for Career and Technical Education*
## *Design Review No. 76*

## Cultural Competency

### Preface

In my opinion, one way to achieve multicultural excellence is to become culturally competent. Cultural competency calls for educators to acquire knowledge, attitudes, beliefs and skills necessary to work effectively with diverse individuals. People moving toward cultural competency work to understand not only from their own perspectives but also attempt to understand through the perspectives and worldviews of others. I purposefully chose to partially write this review for the design team in the first person because I believe moving from an objective to a subjective understanding is a key element in the process of becoming culturally competent. As long as we write and speak exclusively in the third person, we support an underlying assumption that an objective monolithic stance may be preferred. The use of the first person often signals a willingness to consider multiple perspectives. Therefore, this step may be necessary to help us move toward multicultural competency.

It is important that we understand the lived experiences of others. Lived experiences come from the stories and narratives that people share about themselves and their world. I believe that others' stories are crucial to understanding multiple perspectives. Additionally stories are more easily remembered and, therefore, more likely to influence decisions, large and small (Witherell & Noddings, 1991). Although there are numerous personal narratives I could share that illustrate the impact of stories, for expediency I have chosen instead to focus on organizing frameworks that may help us in our work. I would like to suggest three key conceptual frameworks that may prove very useful in designing a culturally competent and relevant new unit of education. These three frameworks are: a cultural competency model, a model for curriculum reform, and a developmental model for racial identity development.

Multicultural competency involves more than race, but race is one of its important facets. Furthermore, as I have taught Multicultural Issues in Education, it is apparent to me that my students need to process their own movement through the stages of racial identity if they are going to be culturally competent educators in our pluralistic society.

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## Cultural Competencies

There are many guidelines to consider for effective work around issues of diversity. The following is a summary of such guidelines based on a model for culturally sensitive therapy with clients of color developed by Wilson & Stith (1993). The list below is a modification of their guidelines and designed to address the needs of individuals from diverse groups.

- Become aware of the historical and current experience of being a member of an oppressed group in America.
- Consider value and cultural differences between various American ethnic groups and how your personal values influence the way you conduct your practice.
- Consider how your personal values influence how you view both the situation and the goals for a sound working alliance.
- Include the value system of the individual in the goal setting process. Be sensitive to spiritual values and the value of the family, church, and the community.
- Be sensitive to and accepting of variations in family norms due to normal adaptations to stress.
- Be aware of how ineffective verbal and nonverbal communication due to cultural variation in communication can lead to premature termination of the working alliance. Become familiar with bilingual, cultural and linguistic ways of knowing and accept their use by individuals.
- Consider the individual's concern in the larger context. Include the extended family, other significant individuals, and larger systems in your thinking, if not in the working alliance.
- Be aware of the convergence of race, gender, and ethnicity, and do not feel threatened by the individual's identification with his or her own group.
- Learn to acknowledge and to be comfortable with the individual's cultural difference.
- Consider the appropriateness of specific strategies with specific individuals. Do not apply learned strategies or models without considering the unique aspects of the individual.

These competencies have been adapted by Ingram and Moule from a list intended for use in counseling a specific racial group; however, they may be widely applied for other areas of diversity in education.

## Level of Curriculum Reform

These four approaches to the integration of multicultural content were detailed by Banks* & Banks (1997, p. 232-243). They may serve as an easy-to-remember outline for planning curriculum at all levels.

- **The Contributions Approach**–Focuses on heroes, holidays, and discrete cultural elements.
- **The Additive Approach**–Content, concepts, themes, and perspectives are added to the curriculum without changing its structure.
- **The Transformation Approach**–The structure of the curriculum is changed to enable students to view concepts, issues, events, and themes from the perspectives of diverse racial and cultural groups.
- **The Social Action Approach**–Students make decisions on important social issues and take actions to help solve them.

*James Banks is a leader in the field of multicultural education. He has published numerous works and has been widely recognized as a scholar outside of this field. He recently served as the President of the American Educational Research Association (AERA). Banks' model of curriculum reform has assisted educators throughout the country in understanding the range of multicultural education approaches.

## An Analysis of These Approaches

Many educators are content to work on the first two levels of this model because it is easier to incorporate these levels into the prescribed school curriculum. In addition, there are some serious concerns with such approaches and, although they appear to meet a multicultural mandate, they may not be enough to ensure cultural competency. Ford (1996), for instance, takes each level deeper and analyzes their effects:

- **The Contributions Approach**–People acquire a superficial understanding of racially and culturally diverse groups.
- **The Additive Approach**–People fail to understand how the predominant culture interacts with and is related to racially and culturally diverse groups.
- **The Transformation Approach**–Educators are active and proactive in seeking training and experience with racially and culturally diverse groups.
- **The Social Action Approach**–People become empowered to make meaningful contributions to the resolution of social issues and problems.

In Ford's model, levels three and four are viewed as being optimal for multicultural excellence. I, too, believe embedding cultural competency requires work at the higher levels. Banks created his model for curriculum reform, yet this framework can be a basis for change in other ways within a system's structure.

Working at a transformative level of reform requires a willingness to confront an obstacle of change that is prevalent in the United States. According to Stanfield and Dennis (1993), "Ethnicity and (especially) race are emotion-laden issues; these are difficult matters for scholars to confront honestly, because scholarly reflection cannot force most Americans...to engage willingly in introspection about these topics" (p. 6). Facing these "emotion-laden" issues may be necessary in our process.

As people, our denial that such issues exist or that we can approach them free of emotion and process may be an indicator that we are not serious about the issues. As we delve more deeply into true curriculum reform at a transformative level, we may move out of a primarily cognitive discussion of multicultural issues and begin to work in the af fective domain. At that point it may be useful to consider the stages of identity development.

## Racial Identity Development

Most identity development models of multicultural competency work for understanding growth and developing multiple perspectives in many areas of diversity. There are many theories of racial identity development (Tatum, 1992); however, I want my students to have a much quicker and clearer understanding of these theories, so I use a four-level racial identity development scale with very simple terms.

- **I'm OK; You're OK**–This stage corresponds to the pre-encounter phase found in many racial identity development theories. It is a level of development where a "colorblind" perspective is seen as a preferred option and "racism is a thing of the past" in the United States.
- **Something is not OK**–This stage corresponds to the encounter phase found in most theories. At this level people become aware that their view of the world may not be the only reality, and that concepts like racism may be far more complex than they had previously understood. It can be a very confusing stage.

- **I'm OK, I'm not so sure about you**–In this stage I summarize many other phases that emerge from different theorists. These include anger, denial, pseudo-independence, immersion, emersion, etc. Depending on the group I am working with and their interests, I expand and define this stage using details from various identity development models.
- **I'm OK, You're OK**–This stage is equivalent to the autonomy or independent phase in other models where people are ready to work for change in a more fully integrated and thoughtful manner. It is not a coincidence that stages one and four have the same name. It is, indeed, often difficult to know which stage the statement represents.

In my classes and other forums, I illustrate these stages with stories (mostly from former students). And sometimes I use cartoons. Most people quickly begin to grasp the framework. They find the stages useful when trying to understand both their own and others' movement through the model. These stages seem to be cyclical and reoccurring, so I try to be open when I speak from or begin to understand another level of my own identity.

As we are willing to move out of the box and begin to reconsider our own strong and logically held assumptions about the nature of the world, these stages may help us move more safely and effectively.

I find the following materials useful in helping educators integrate multiple perspectives and move themselves toward cultural competency for the first time or for continued growth.

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## Leadership

### Definition

Leadership means guidance or direction, and is most commonly used in the sense of a person's capacity or ability to lead an organization. The leader is the principal person charged with directing the institution's course, and is ultimately responsible for its success or failure. Organizational experts debate whether leaders are born or taught, and sometimes make a distinction between managers (who take care of the details) and leaders (who oversee the bigger picture). However, most experts today agree that leadership is a combination of managing and leading, and knowing when to do which.

The way that a leader leads, through methods or personality, or a combination of both, gives rise to leadership style and philosophy. Examples of widely recognized styles of leadership (Schwahn & Spady, 2001) include: Authentic, Visionary, Service, Cultural, Charismatic, and Authoritarian. In current practice, as Fullan (2001) states, "Today's leaders are generally shaped by a democratic and participative style, rather than the entrenched authoritarian style" (p. 18).

### Key Features

Leadership implies followership:

- People need trust in order to follow. Trust is the implied understanding that followers will not be exploited, misled, or lied to; that their needs will be heard and considered; that commitments made will be followed through; and that the leader is honest in intention (Axelrod, 2000).
- Leaders "focus institutions on their fundamental purpose for existing, their core values, and the vision of what the institution is and ideally wants to become" (Schwahn & Spady, 2001, p. 12). Therefore, leaders' actions support the institution by being consistent with the central mission, rather than being made for self-serving purposes.

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- Leadership today involves working with the organization's members and constituents to create and communicate a concrete picture [vision] of an organization operating at its ideal best in a complex world of change (Schwahn & Spady, 2001, p.13). "Vision is the essence of leadership" (Terry, 1993, p. 38).
- Leadership is about building and maintaining relationships, internally among the members of the institution, and externally with the community and other organizations.
- Leadership is "more than concern or obsession for the bottom line" (Jaworksi, 1998, p.62).
- Leadership skills apply to all levels and members of the institution and to all areas of life.

**Impact on Learning**

From a systems perspective, leadership impacts every level of the institution and is at the same time a reflection of it:

- Leadership sets the atmosphere and the environment of an institution, and facilitates each sector and member of the learning community to fulfill and model the learning mission and values of the institution.
- Leadership is essentially about learning, because leaders first need self-knowledge (knowing who they are) if they are to enable the same in others. "Developing yourself as a leader begins with personal reflection, personal assessment, and personal growth" (Schwahn & Spady, 2001, p. 36).
- Leadership is contextual, and is about "learning to do the right thing in the right setting" (Fullan, 2001, p. 125), which applies to all members of the institution. Leadership will become "an emergent function, rather than a property of people appointed to formal roles" (Hesselbein, Goldsmith, & Beckhard, 1996, p. 68).

**Implications for New Designs**

- Leaders "help the group identify its beliefs regarding learners and learning, teachers and teaching, and identify a clear and inspirational statement of why the system exists" (Schwahn & Spady, 2001, p. 125). The leader needs to be the key facilitator, supporter and modeler of the learning signature.
- Leaders should never stop learning. As part of the learning staff, the leader should provide useful learning experiences (staff development) for themselves and their staff to establish clear and compelling ways for the institution to benefit from what everyone knows (Schwahn & Spady, 2001, p. 13).
- Leaders serve as catalysts, guiding members of the institution to learn, create, and find solutions, rather than act as problem-solvers (Terry, 1993).
- Leaders empower each member of the institution to act and respond appropriately, according to the learning context and situation.
- Leaders prepare for the future and anticipate when changes are needed, shaping as well as responding to the future. Leaders show an openness to change, which is inevitable, and an ability to create and sustain personal and organizational health and security through the change process (Fullan, 2001).
- Leaders build and sustain partnerships with internal and external constituencies.
- Leaders develop a vision and derive accountability measures to determine progress. "Once an organization has identified what it wants to produce (e.g., students able to demonstrate challenging learning outcomes), the leaders have to track the progress of the students and the organization" (Schwahn & Spady, 2001, p. 129). "Student assessment and the creation of feedback loops are critical roles of [leaders] who also create feedback loops for themselves and help everyone else do the same" (Schwahn & Spady, 2001, p. 130).
- Leaders organize learning components to achieve change by aligning structures, policies, and procedures with the organization's vision (Schwahn & Spady, 2001, p. 130).

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## *Design Review No. 78*

### Change

**Definition**
Change is the transition from one state or condition to another. It can occur gradually over a period of time, or come about abruptly and unexpectedly. Change is a process that involves learning; and learning brings about change.

**Key Features**
According to systems theory, change is a naturally occurring condition:

- Equilibrium is neither the goal nor the fate of living systems....Disequilibrium is the necessary condition for a system's growth (Wheatley, 1992, p.78).
- No part of a larger system is left unaffected by changes that occur someplace within it (Wheatley, 1992, p. 97).
- We cannot simply *make* change happen as if we were separate from the thing we seek to change (Isaacs, 1999, p.145).
- Changes do not occur randomly, in any direction. They are always consistent with what has gone on before, with the history and identity of the system (Wheatley, 1992, p. 94).

The pace of change is irregular, with spurts of learning, or change, separated by longer periods of apparent stability (Imel, 2000).

Many theoretical frameworks have been developed to classify and deal with change. Among current frameworks are these four:

1. Change can be classified according to two levels (Bateson, cited in Zorn, Christensoen, and Cheney, 1999, p. 10):
   - ***First-order change***–Minor, incremental change, which can even be attempts made in order not to change.
   - ***Second-order change***–Major change involving system adjustments that is difficult to monitor and to anticipate, even if resulting from first-order change. The system becomes something fundamentally different than it was.

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2. Four different types of change exist (Imel, 2000; Hohn,1998):
   - ***Change by exception***–An exception made to an existing belief system, for isolated events.
   - ***Incremental change***–Gradual movement, so that one is not aware of it.
   - ***Pendulum change***–Extreme exchanges of points of view.
   - ***Paradigm change***–Fundamental rethinking of premises and assumptions, touching on beliefs and values about how the world works.

3. Organizational change has three forms (Carter & Alfred, 1997):
   - ***Operational change***–Focuses on improvements to current practice as opposed to more radical approaches that go beyond tinkering.
   - ***Frame breaking change***–Departures from past or current practice and are often related to high-profile achievements that take the college "out of the box."
   - ***Stretch***–Strategies that help an organization reach for the future while maintaining equilibrium and preserving the past. It is incremental and catalytic.

4. Change generally proceeds through five stages (Duck, 2001) whether planned or unplanned:
   - ***Stagnation***–The system has reached a static point. Something isn't working anymore in relation to the other components of the system.
   - ***Preparation***–The system readies itself for alteration or transformation; or perhaps someone in the institution instigates a new procedure or plan.
   - ***Implementation***–The change begins to take effect. This may be abrupt or gradual.
   - ***Determination***–Resistance to the change is resisted and the process continues its path.
   - ***Fruition***–The process is completed, the change has occurred, and a new static condition sets in.

The process of change, from the human viewpoint, is a difficult process for most people to live through (Duck, 2001). It is said that we are currently experiencing more rapid change than at any other period in time. And change creates upheaval, stress, and anxiety (fear of the future) whether it is welcomed or not, because it requires a questioning of assumptions and rethinking of beliefs and actions.

## Change in Education

The change that is occurring in our society is having an impact on teaching, learning, and the way that learning institutions operate. Major trends influencing education include (Baker, 1999; McClenney, 1999; Walker, 2001):

- **Internationalization of the Marketplace**–The globally competitive economy has created a variety of education providers: charter schools and colleges, e-schools and colleges, broker schools and colleges, proprietary schools and colleges, and private non-profit schools and colleges. Institutions can enroll students from anywhere in the world; the concept of community has enlarged.

- **Learner Profiles**–The students are becoming much more diverse on a variety of dimensions. For example, the majority of students in higher education are older, attend part-time, are employed, and come from a variety of social and cultural backgrounds. They have families, jobs, mortgages, and other demands on their time. They want convenience, good treatment, and 24-hour availability of instruction and services.

- **Employer Needs**–Certification is required for even entry-level jobs. Students must acquire an increasing volume of knowledge and skills and develop the ability to think critically and solve complex problems.

- **Technology**–Widespread use of computers and communication technologies affect how, where, and from whom students are learning. They offer new areas of inquiry and expertise, offer new methods of learning and instruction, and create new ways to access knowledge and manipulate information.

- **Distributed Education**–On-line learning is easily available and in demand, offering more opportunities and increased demands on resource funds and support. The growth in distance education and the changes in funding sources erase the economic sense of in-state and out-of-state tuition differences.

- **Performance Funding**–The emphasis is on productivity, customer satisfaction, and return on investment (ROI). Students are now the measure for performances. Remedial education is seen as a reward for persistent poor performers. (Politicians/Investors don't like to pay for anything twice.)

## Change in Career and Technical Education at the Postsecondary Level

Technical and vocational colleges are enmeshing with community colleges and are now considered part of higher education. Movement to bring them more in line with the college system is having the following impact (Sellingo, 1999):

- Career and technical education is seen as a stepping stone in public higher education.
- Programs include liberal arts components for improvement of reading and writing.
- Much of the hands-on training is being reduced to make room for the academic and theory.
- Regional accreditors have requirements that are not satisfied by many technical colleges.
- Certification tests for specialized products and for professional and technical organizations are required, but differ from teaching needs.
- Funding squeezes are arising; costs are less for theory than for practical classes.
- Partnerships with colleges and universities are needed to allow transferability.
- Associate degrees may be coming to technical colleges just as baccalaureates are coming to two-year colleges.

## Implications for New Designs

A new educational infrastructure is needed to thrive in a market with competitors pushing new boundaries and students wanting more and better service. This door means new organizational models, new ways of doing business, and new approaches to measuring performance (Carter & Alfred, 1998). Some points to think about:

- Successful organizations place great value on working with the culture that has evolved, rather than fighting it (Carter & Alfred, 1998)

- Making systemic changes requires major shifts in our assumptions, beliefs, and actions. (Kemp, 2000). It requires a change of mind and change of practice.

- Changing an institution will require high involvement and a system-wide approach. Creating a collective sense of purpose, sharing information traditionally known only to a few, valuing what people have to contribute, and inviting them to participate in meaningful ways positively affect outcomes (Wesibord & Janoff, 1999, p.4)

- No change happens in isolation. Making the interdependencies explicit enables shifts based on a common view of the whole. We can each play our part while understanding our contribution to the system (Wesibord & Janoff, 1999, p.4).

- Systemic, structural, and cultural change force a reexamination and redefinition of the roles played by faculty, staff, and administrators (Carter & Alfred, 1997).

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## *New Designs for Career and Technical Education*
## *Book Summary No. 79*

### Leading Change*

**Major Premise**

The globalization of markets and its resultant competition are driving companies to become more responsive and flexible and are bringing about large-scale change. Managers have failed in their attempt to transform their companies into stronger competitors because current change strategies—total quality management, reengineering, right sizing, cultural change, and turnarounds—fail to alter behavior, which is key to change. Leadership aligns employees with a vision and is critical to making change happen.

**Major Themes**

Every leader must guide the company through an eight-step process to achieve transformation (p. 21):

1. **Establishing a sense of urgency**–Examining realities and identifying and discussing crises and opportunities.
2. **Creating the guiding coalition**–Putting together a group with enough power to lead the change.
3. **Developing a vision and strategy**–Creating a vision and developing strategies to achieve that vision.
4. **Communicating the change vision**–Using every vehicle to constantly communicate the new vision and modeling the behavior expected of employees.
5. **Empowering broad-based action**–Getting rid of obstacles and changing systems and structures that undermine the vision.
6. **Generating short-term wins**–Planning for visible improvements and visibly recognizing and rewarding people who made the wins possible.

This process must be followed step by step, and thoroughly at each step, or behavioral changes will be undermined (much like taking a course of antibiotics to completion, even if the

*Kotter, J. (1996). *Leading Change*. Boston: Harvard Business School Press.
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7. **Consolidating gains and producing more change**–Using increased credibility to change all systems that don't fit the transformation picture; reinvigorating the process and hiring and promoting people who can implement the vision.
8. **Anchoring new approaches in the culture**–Creating better performance through customer- and productivity-oriented behavior, more and better leadership, and more effective management; connecting new behaviors with success; and ensuring leadership development and succession.

symptoms seem relieved early on) in order to sustain, nurture, and enhance an understanding of the change that is to be accomplished. Constant communication and employee contribution is essential.

**Implications for Business**

Change is necessary in order to survive and succeed in the 21st Century. To create positive systems that are adaptable to the rapidly changing environment, corporate culture will have to change, requiring:

- **Persistent sense of urgency**–Constant reevaluation and candid discussion will be more important than political correctness (p. 162).
- **Teamwork at the top**–Teams are essential because individuals won't have the time or expertise to do everything (p. 163).
- **Development of leadership potential**–Managers deal with the status quo, leaders deal with change.
- **Broad-based empowerment**–Flatter hierarchies and less bureaucracy will require delegation of most managerial responsibilities to lower levels and the empowerment of employees to manage their work groups (p. 166).
- **Lifelong learning**–Employees need support, guidance and training to take on additional responsibilities and to develop leadership potential.
- **No unnecessary interdependence**–Too many dependencies between units prevent decision-making without numerous approvals and impede positive action (p. 169).

**Implications for New Designs**

Because education is part of the transforming global culture, and becoming more competitive, post secondary institutions should be run more like a business. The institution should consider its learners as customers, and its services as productivity, to follow the outlined eight-step process to bring about the transformation that is needed.

For educational institutions to become more like 21st century organizations, needed changes include (p. 172):

- Bureaucracy should be limited to fewer levels, rules, and employees.
- Administrators should expect to lead and staff to manage.
- Polices and procedures should produce minimal interdependencies needed to serve learners.
- Information systems should provide data on learners and the institution's performance toward them.
- Training and support systems should provide management training and leadership preparation to staff (and to students!).
- The culture should be empowering, more risk-tolerant, quick to make decisions, and oriented toward the learners.

## Implications for New Designs for Career and Technical Education

The volatile economy is producing careers that look quite different from those typical of the 20th Century (p. 184). In the past, blue-collar workers found companies with good unions, learned how to do a job, and stayed in that position for decades. Union rules appeared to discourage personal growth and narrow job descriptions reduced learning. All that is changing; no job is permanent. Technical and professional careers require more broad-based skills and abilities that will require lifelong learning, particularly in communication, teamwork, management, and leadership.

## *New Designs for Career and Technical Education*
## *Book Summary No. 80*

### Harvard Business Review on Change*

**Major Premise**

Many change programs, embraced by organizations in the past, have failed to bring about change. A collection of articles written during the 1990s by the top business writers on change offers an overview of current theories on managing corporate change.

**Article Summaries**

***Leading Change: Why Transformation Efforts Fail, by John P. Kotter***

Over the last decade, companies have tried various methods—total quality management (TQM), reengineering, right sizing, restructuring, cultural change, and turnarounds—to remake themselves and the way they conduct business in the new market. But these methods have rarely worked well. Lessons learned from their experience can help to inform organizations as the business environment becomes increasingly competitive.

Change involves numerous phases that together need time to produce results. Skipping steps creates only an illusion of speed and never produces a satisfying result. A critical mistake (which even the most capable manager can make) in any of the steps, can have a devastating impact, slowing momentum and reversing gains.

This article, identifying eight crucial errors, was later developed into the book *Leading Change,* which provides eight steps to bringing about corporate transformation. The steps include: Establishing a sense of urgency; Creating the guiding collation; Developing a vision and strategy; Communicating the change vision; Empowering broad-based action; Generating short-term wins; Consolidating gains and producing more change; and Anchoring new approaches in the culture.

*Author. (1998). *Harvard business review on change.* Boston: Harvard Business School Press. This Summary was prepared by Katherine Zmetana, Ed. D. for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

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***Building Your Company's Vision, by James C. Collins and Jerry I. Porras***
Business today requires an ability to balance continuity and change. The best way of achieving this balance is to adopt a vision framework that provides a core purpose and core values that will endure, while allowing strategies and practices to adapt to the changing market. A strong vision that provides guidance about what to conserve and what to change must keep to the essential elements.

The vision framework recommended by the authors comprises two principal parts: core ideology and envisioned future. *Core ideology* is the glue that holds a company together as it grows and changes. It combines an organization's core values and core purpose. *Core purpose* is the organization's fundamental reason for being. *Core values* are the organization's unyielding tenets, which remain true even when they may put the company at a competitive disadvantage

An *envisioned future* identifies bold stretch goals, referred to as Big Hairy Audacious Goals (BHAGs). It also provides vivid descriptions of what it will mean to achieve them. For example, Henry Ford set the goal of democratizing the automobile, then declared, "When I'm through, everyone will have one. The horse will disappear from our highways."

Most vision statements are fuzzy, boring, and lacking in imagination. To be effective, and to truly motivate, a vision statement must be dynamic and inspiring. Only then can progress be stimulated.

***Managing Change: The Art of Balancing, by Jeanie Daniel Duck***
For change to occur in today's knowledge organization, managers need to think of themselves as overseeing a dynamic system, rather than managing change bit by bit, in small pieces, as does TQM, process reengineering, and employee empowerment. Managers must connect and balance all pieces of the change effort like balancing a mobile, for a change in one area throws another area off balance.

Change is fundamentally about feelings. Ignoring the emotional connections alienates people and devalues those kept out of the process. It calls to mind the metaphor: The operations were a success but the patient died of shock. Creating an organizational context that accepts change means opening the lines of communication between the people leading the change effort and those who will be implementing the new strategies.

A Transition Management Team (TMT) should be created: Bring together a group of 8-12 highly talented leaders, who will report to the CEO and commit all their time and energy to managing change. This team establishes the context for change and provides guidance; stimulates conversation at all levels; provides appropriate resources; coordinates and aligns projects; ensures congruence of messages, activities, policies, and behaviors; provides opportunities for joint creation; anticipates, identifies, and addresses people problems; and prepares the critical mass. When the process has stabilized, the TMT disbands.

***The Reinvention Roller Coaster: Risking the Present for a Powerful Future, by Tracy Goss, Richard Pascale, and Anthony Athos***
Change programs, such as cross-functional teams, defect reduction, and business redesign processes, may lower costs and improve performance, but they treat the symptoms, not the underlying conditions. When mangers seek a more fundamental shift in their organization's capabilities, they need to do more than improve, they need to reinvent.

Reinvention is about creating a new context to improve competitiveness. Context shapes thinking and perception, so that activities are altered accordingly. But first the manager must uncover and then alter the invisible assumptions and premises on which the company's decisions and actions are based, because the sum of the past dictates what is possible for the future.

Reinvention is an up-and-down adventure. It involves assembling a critical mass of stakeholders to do an organizational audit, creating urgency, harnessing contention, and engineering breakdowns that reveal weak spots. It means creating new possibilities for the future that evoke widespread interest and commitment, and that is done by summoning the courage to abandon *what is* for *what might be*.

***Changing the Mind of the Corporation*, by Roger Martin**
Companies don't make the most of new opportunities because they're making the most of old ones. Organizations tend to resist new truths in a mechanical way and soon end up in a crisis because they're doing the very things that once made them big.

This syndrome of troubled companies is characterized by four stages. First, the founders articulate their vision and management steers the company through change to operationalize the vision. Then the second stage sets in, where the steering mechanisms tend to become rigid, with much stronger ties to the founding vision than to the changing economic environment. In the third stage, feedback deteriorates. And in the fourth stage, defense mechanisms block out the trouble signals and prevent information from being put to proper use.

Companies must burn themselves down every few years and rebuild their strategies, roles, and practices. First they must acknowledge the pattern of corporate crisis; reverse engineer the steering mechanisms; subject the assumptions of the enacted strategy, especially market data to measurable tests; open a strategic dialogue within the company; aspire to the freedom and discipline of scientists; redefine competitive advantage; develop measures to plot progress toward victory and a new strategic language to describe it; and make goals and methods transparent enough that employees will be willing to take some calculated risks.

***Why Do Employees Resist Change?* by Paul Strebel**
Executives and employees see change differently. For senior managers, change means opportunity—both for the business and for themselves. But for many employees, change is seen as disruptive and intrusive. That's why major change initiatives often fail, despite the best efforts of senior executives.

To overcome resistance and align employee goals with company goals, managers must reconsider their employees' *personal compacts*. These are the mutual obligations and commitments that exist between employees and the company and that define their relationship. Personal compacts in all companies have three dimensions: formal, psychological, and social. Employees determine their responsibilities, their level of commitment to their work, and the company's values by asking questions along these dimensions. How a company answers them is the key to successful change.

***Reshaping an Industry: Lockheed Martin's Survival Story*, by Norman R. Augustine**
The case study of a company in the U.S. defense industry, written by its CEO, provides an example of turning a catastrophe into a success story. In 1995, Martin Marietta and Lockheed combined to form Lockheed Martin, just as the U.S. defense industry saw more than 50 percent of its market disappear.

One of the most difficult and painful prescriptions for this company was to "read the tea leaves." The first signs of change in the defense industry began not when the Soviet Union imploded, but after narrow escapes from takeover attempts. Both Martin Marietta and Lockheed learned that forced restructurings meant problems ahead.

Pieces of advice gained from the resulting turbulence include: Have a road map even when there are no roads; Move expeditiously; Make mega changes; To think outside the box, get outside the box; Benefit by benchmarking; Don't lose sight of the day-to-day business; Focus on the customer; Be decisive; Create one culture for one company; Remember that your real assets go home at night; and Communicate, communicate, communicate.

Companies in technology-driven industries must reinvent themselves continually. But managers must stay focused on their business, their customers, and their most important asset—employees.

### *Successful Change Programs Begin with Results, by Robert H. Schaffer and Harvey A. Thomson*

Most corporate initiatives focus on *activity-centered* programs, such as seven-step problem solving, statistical process control, and total quality management training. But results don't materialize because there is no explicit connection between action and outcome. Instead management should focus on *results-driven* programs that focus on achieving specific, measurable operational improvements within a short time.

Activity-centered programs rely on broad-based policies and are more concerned with time-consuming preparations than with measurable gains. Results-driven programs rely on an incremental approach to change, building on the lessons of previous changes. As a result, successes come quickly, and mangers build their skills and gain the support of employees for future changes.

Every opportunity for change can get off to a good start by following these suggestions: Ask each team to set and achieve a few ambitious short term performance goals; Periodically review progress, capture the essential learning, and reformulate strategy; Institutionalize the changes that work—and discard the rest; and Create the context and identify the crucial business challenges.

### Implications for New Designs

The advice from the authors of these articles could be applied to New Designs for Career and Technical Education in the following ways:

- Remember that bringing about transformative change requires time, and must not be rushed (Kotter, 1995).
- Create a learning signature that is simple and straightforward, but also dynamic and inspiring, so that it is motivational and energizing (Collins & Porras, 1996).
- Remember the human element: Establish relationships and communication at all levels and at every step (Duck, 1993).
- Provide a Transition Management Team to guide the organization through any major change (Duck, 1993).
- Anticipate crises, and expect any major transition to have its ups and downs (Goss, Pascale, & Athos, 1993).
- Create a context for change by imagining what the future *could be* so that it can begin happening now (Goss, Pascale, & Athos, 1993).
- Expect to adjust the institution's strategies and practices at least every decade as the institution grows and changes (Martin, 1993).

- Create personal compacts with staff within each department and interdepartmentally to align staff and institution visions and goals (Strebel, 1996).
- Stay focused on the institution's mandate, the students, and especially, on staff (Augustine, 1997).
- Be ready to make some tough decisions, and then go through with them (Augustine, 1997).
- Seek incremental change in sharply focused, attainable goals (Shaffer and Thomson, 1992).
- Empower staff to identify short-term goals that contribute to the greater goals, and provide resources to achieve them. (Shaffer and Thomson, 1992).

## *New Designs for Career and Technical Education*
## *Book Summary No. 81*

### Do We Really Want Constant Change?*

### Major Premise

We are in a culture that worships change. The compulsion to change—reengineer, downsize, restructure—as recommended by current leadership gurus, is impossible for an organization or society to sustain. It constantly throws organizations into a state of chaos, overlooks the human need for stability, and ignores how important stability and predictability are for organizational efficiency.

### Major Themes

Our current change culture has brought about the following issues:

- *Change* and *flexibility* have become "god terms"—terms that are accepted unquestionably as good terms, with no reflection as To What? or For What? Along with the terms *quality*, *efficiency*, *dialogue* and *customer service*, it's difficult to criticize anything that's done under such labels (p. viii).
- Until the 1980s, leadership was considered to be good management—providing direction and support to influence people to strive for effective goal accomplishment (p. 20). Since that time, it has been reconceptualized to mean creating change, all the time. As a result, a leader's reputation is based on creating change, or at least appearing to do so (p. 22).
- Government and not-for-profit organizations are receiving increasing pressure to do more for less, and business corporations are receiving increasing demands for openness and environmental and social responsibility. The *recommended response* to such pressures is to organize for continuous change; that is, become a flexible organization that can react and respond quickly to changes in the environment (p. 16).

*Zorn, T. Christensoen, L., & Cheney, G. (1999). *Do we really want constant change?* Beyond the bottom line No. 2. San Francisco: Berrett-Koehler Communications Inc.
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- Organizations overload themselves with information. But market studies cannot tell much about what kind of change an organization should embrace. So-called proactive organizations create needs for the changes they would like to make (p. 23).
- Our media, especially TV sitcoms, create a false impression of the way most of life's problems are solved. They reflect our need for instant gratification, our impatience with the present, and our desire for change. Long-term solutions requiring patience and endurance are devalued in our media-saturated and novelty-hungry world (p. 7).
- The response to change is often more change, rather than stability and rest.
- Change usually focuses almost exclusively on productivity and not on people.

### Implications of Constant Change on Business

Introducing constant change is disruptive in any environment. Those most affected are the people:

- The business environment is becoming increasingly turbulent—that is, it is changing rapidly, unpredictably, and in multiple ways (p. 15).
- All too commonly, reengineering efforts fail, largely because institutions become dysfunctional during the people-squeezing process; business plans are discarded and revised; expected benefits turn out to be ephemeral; and the organization loses direction (p. 29).
- Employees react by being overwhelmed, stressed, and burned out. (p. 31) People talk about change as something they have no control over (p. 17).
- The more an organization strives for continuous change, the more difficult it can be for members to feel a sense of stability, especially when the changes do not flow logically or organically from established missions and strategic plans (p. 13).
- Constant change results in a weak social contract between individuals and organizations (p. 30), with widespread feelings of insecurity about the future. With no long term, there is no basis for trust, loyalty, or mutual commitment.
- The common theme to most change programs is that people lose jobs (p. 32).

### Implications for Learning Institutions

Change affects learning organizations the way it affects businesses. Some other commonalities to higher education include:

- Staff resist major organizational changes, often with a "flavor-of-the-month" response. Faculty's natural cynicism tends to push up another notch (p. 31).
- Staff hold a deep-seated questioning of the motives, goals, authenticity of any program when they suspect that there will be no follow-up (p. 32).
- The act of making proposals itself becomes a key work activity, pulling faculty and staff energies away from more basic tasks (p. 14).
- Training seminars leave staff little time to do their job.

### Recommendations

For administrators considering change initiatives, the authors offer this advice: It is important to stop and reflect on both sides of the change coin, considering to what end the change is being introduced, as well as what its impact will be on stability, community, commitment, and loyalty. Being responsive to external and internal demands for change is appropriate up to a point—but not at the expense of losing what's centrally important to the organization (p. 35):

- Be sensible and self-reflective about the various fads and fashions that come along.
- Choose change initiatives carefully.
- Listen to employees' concerns about change fatigue, and develop sensitive and realistic responses to them.
- Be attuned to ironies, contradictions, and paradoxes. And be aware of which changes the initiatives have set in motion.

- Recognize that the institution can be a setter of trends and not just a follower of the crowd.

**Implications for New Designs**

- Focus on each of the design elements and its relationship with the overall purpose of the design process to determine if, how, and why the change is required.
- Keep everyone informed of the progress, the setbacks, and of the ultimate goals.
- Celebrate small steps along the way, recognizing the achievements.
- Allow staff and students time to distill the learning that is occurring.

## *New Designs for Career and Technical Education*
## *Book Summary No. 82*

### Managing Transitions: Making the Most of Change*

**Major Premise**

Change is not the same as transition. Change is situational (i.e., a new boss, new policy, new computer system), while transition is the psychological process people experience in order to come to terms with the new situation (p. 3).

**Major Themes**

- Beginnings depend on endings: Change and endings go hand-in-hand, change causes transition, and transition starts with an ending—letting go of the old.
- Transitions have three overlapping phases: ending—neutral zone—new beginning (p. 6).
- Managing a transition is an investment in the future and in the well being of the organization.
- It is not *change* that people resist, rather they resist transition—the letting go of the familiar and moving to a new beginning.
- Transitions can be effectively managed.

**Implications for Learning Institutions**

- Recognizing and accepting that every transition is an opportunity to heal old wounds that have been undermining activity.
- Understanding that the neutral zone, where the organization is no longer fully in the old place and not yet fully in the new, offers an opportunity for creativity and entrepreneurship.
- Managing transition effectively takes time and requires an investment in the people within the organization. Shortcuts cost more than they save.
- Un-doing the damage done by an ineffective transition has real and measurable costs, and leaves behind a fatigued, demoralized work force (p. 124).
- Capitalizing on change creates the opportunity for today's organizations to survive.
- Monitoring their own response to transitions and allowing time for self-renewal is the responsibility of change managers/facilitators.

*Bridges, W. (1991). *Managing transitions: Making the most of change.* New York: Perseus Books. This book summary prepared by Delores E. McNair, Ed. D. for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

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**Implications for New Designs**

- All staff in innovative learning institutions create change; therefore, staffing in terms of hiring, assignments, and performance assessments supports risk-taking and creativity.
- Staff development provides experiences and practice in leading and managing change.
- Resources for staff development are allocated to support growth and change in the learning staff.
- Transitions occur continuously; however, it is only when continuous change is normalized that it can be assimilated and used to create new designs in institutions.
- Leaders of change management recognize the first task is to understand the destination and how to get there; the first task of transition management is to convince people to leave "home" (p. 32).
- Leaders of change and transition prepare contingency plans for the unexpected and/or worst-case scenarios. This builds flexibility into the plan, allowing leaders to adjust direction when needed.
- Things begin when the change plan says they will; new beginnings take place more slowly–or not at all–if the transition is mishandled (p. 64). Beginnings follow the timing of the mind and the heart (p. 50).
- Not all changes occur to foster improvements; rather, some are small readjustments to maintain the present balance.

**Learning Staff and Staff Development**

Calderon, M. (1997). *Staff development in multilingual multicultural schools* (Report No. EDO-UD-97-5). New York, NY: ERIC Clearinghouse on Urban Education. (ERIC Document Reproduction Service No. ED410368).

Effective instruction in bilingual/multicultural schools requires teachers to have mastery of subject matter and a variety of teaching strategies, and to possess state-of-the-art knowledge of learning theories, cognition, pedagogy, curriculum, technology, assessment, and programs that are proven to be successful. As important, teachers need to have ample knowledge of students' language, sociocultural and developmental background, and to be as proficient as possible in a second language.

Clair, N., & Adger, C.T. (1999). *Professional development for teachers in culturally diverse schools* (Report No. EDO-FL-99-08). Washington, DC: ERIC Clearinghouse on Languages and Linguistics. (ERIC Document Reproduction Service No. ED435185).

The changing face of the student population in the United States brings a diversity of languages, cultures, experiences with schools, and economic and social power. Professional development for classroom teachers in culturally diverse schools needs to address basic constructs of bilingualism, second language development, nature of language proficiency, role of the first language and culture in learning, and the demands of the school system on culturally diverse students.

Kerka, S. (2000). *Career development specialties for the 21st century* (Trends and Issues Alert No. 13). Columbus, OH: Center on Education and Training for Employment. (ERIC Document Reproduction Service No. ED437555).

Due to the rapidly changing world of work, new career development professions have emerged and are in high demand. School-to-Work programs, One-Stop Career Centers, and educational institutions are employing career group facilitators, job search trainers, career resource center coordinators, career coaches, career development managers, intake interviewers, occupational and labor market information resource people, human resource career development coordinators, employment/placement specialists, and workforce development staff persons.

Lankard, B.A. (1994). *Recruitment and retention of minority teachers in vocational education* (Report No. EDO-CE-94-144). Columbus, OH: ERIC Clearinghouse on Adult and Career and Vocational Education. (ERIC Document Reproduction Service No. ED368889).

Students need support of teachers from their own cultures who understand the culture and family practices and behaviors to be role models for educational success and achievement; however, the number of minority teachers continues to decline. To increase the availability of minority teachers and their continuation in the field of vocational education, we must first increase the number of minority students enrolling in vocational programs in high school and entering teacher education programs in college. This can be done through developing candidate pools, promoting vocational education in schools, establishing scholarships, and recruiting at community colleges, business, and industry.

Lindholm, J. (1999). *Preparing department chairs for their leadership roles* (Report No. EDO-JC-99-08). Los Angeles, CA: ERIC Clearinghouse for Community Colleges. (ERIC Document Reproduction Service No. ED433870).

Due to the discontinuous nature of change, it is critical that department chairs learn effective leadership skills. Chairs must be skilled communicators, mediators, and facilitators and able to promote teamwork. Leading in the 21st century requires adaptiveness, flexibility, responsiveness, and ethical sensitivity. These skills are best learned in action-learning projects, reality-based case methods, and mentoring.

Maurer, M.J. (2000). *Professional development in career and technical education*. Columbus, OH: National Dissemination Center for Career and Technical Education. (In Brief No. 7).

Professional development has the purpose of improving student learning and performance, identifying learning processes and accountability measures to be used, forming teams of instructors to share knowledge and expertise, staying current with research, and guiding change. Effective professional development activities occur when scheduled on a regular and continuous basis and is enhanced through the use of technology.

Wonacott, M.E. (2001). *Keeping vocational/career-technical educators current* (Trends and Issues Alert No. 23). Columbus, OH: Center for Education and Training for Employment. (ERIC Document Reproduction Service No. ED449377).

In addition to staying current in their content areas and in the use of technology through work experience, advisory committees, workshops, memberships in professional associations, networking, and professional journals, today's vocational teachers are using distance communication technology to stay abreast of changes in their fields and in the integration of academic and occupational programs.

# Design Reviews for the Learning Environment

## *New Designs for Career and Technical Education*
## *Design Review No. 83*

## Cultural Design of Learning Environments

### Definition

Cultural design requires that the design process and resultant building(s)/environment take into account not only typical issues but also recognize and celebrate the cultural issues and traditional values, which are embodied by and sacred to, the cultural group for which the design of the learning environment is intended.

Cultural design requires that designers open themselves up to new understandings and ways of *communicating* and *gathering information*, and to ways of communicating the design's intent back to the user group. It should be assumed that such methods for communication and collaborative design *will* vary from one cultural group to the next. This requires that designers sensitively focus on understanding appropriate and productive methods for communication, and then focus on uncovering the traditional values and cultural issues, which must be addressed in the design.

Certainly, cultural issues will vary greatly from one cultural group to another. For the Navajo, the *clan* system exerts a tremendous unifying influence on all aspects of Navajo life, from the individual sense of homeland to interpersonal relationships. Each clan holds a particular and important role in the past and future of the Navajo Nation. Clan identity on the maternal side and then the paternal, govern individual attachments. The closely held oral tradition is strategically passed on to new initiates. Clan relationships may inform building design from determining group and room/environment size, orientation and connection to nature, to spatial relationships, form, and decoration. This range of design issues must be investigated and addressed for each design process and project. For the Navajo, the building of a project (especially the Hogan) must be accomplished through a sacred process with the blessing of the ground before construction begins and a subsequent blessing of the building or site. The following list of issues addresses broad cultural design requirements for the design process.

This Design Review was prepared by Lynette Pollari and Steve Thompson, Architects, Thompson Pollari Studio, Scottsdale, Arizona, for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

This design review was prepared as part of the project, New Designs for Career and Technical Education at the Secondary and Postsecondary Levels, which is a part of the program of work for the National Research Center for Career and Technical Education headquartered at the University of Minnesota and funded by the Office of Vocational and Adult Education in the U.S. Department of Education, PR/Award (No. V051A990006.) However, the contents do not necessarily represent the positions or policies of the Office of Vocational and Adult Education or the U. S. Department of Education, and you should not assume endorsement by the Federal Government. This project was directed at Oregon State University, a partner institution in the National Center. The Project Director is George H. Copa, Professor, School of Education, Oregon State University, Corvallis, Oregon. For more information, see the website for New Designs for Learning at Oregon State University at http://newdesigns.orst.edu. This design review is part of a larger series of reviews presented in the report: Wolff, S. J., & Copa, G. H. (2003). *New designs for career and technical education at the secondary and postsecondary levels: Compendium of design reviews of related research, policies, and exemplary practices.* Minneapolis, MN: National Research Center for Career and Technical Education, University of Minnesota. The full report is available on the above website.

**Design Process Issues**

- Present yourself as open and invested in gaining an understanding of cultural issues and traditional values:
  - Know how to listen; combat preconceptions.
  - Establish a continual pattern of inquiry; let people know that you really intend to learn about issues which are alien to your culture and background.
  - Do what you need to do to become facile with communications (i.e., you may need to learn the basics of native languages or communication systems (sign language, etc.).
- Identify appropriate design forum(s) for sharing and gaining design information:
  - Meetings (a focus on "who" should be involved is very important).
  - Precedent research (for many cultural groups, a focus on vernacular architecture is most productive; i.e., for the Navajo, the Hogan is the traditional dwelling type which affects all building projects).
  - Field trips.
  - Ceremonies and special cultural events.
  - One-on-one personal interactions.
- Solidify understandings of appropriate social behavior for varying design forums:
  - Regarding meetings: "who" should be involved and "where" should the event be held; meeting at special places can support enriched input (i.e., "fireside chats, use of the "talk circle" format).
  - Regarding field trips: "what" facilities can be visited and which are "off-limits" from a cultural perspective.
  - Regarding ceremonies and special events: what is your role at this event; are you a respectful viewer or may you also become involved in the event.
  - Regarding interpersonal interactions: physical and visual connections are important; i.e., for the traditional Navajo, direct visual contact can be seen as rude and forward.
  - Be patient; sense of time for one cultural group may not be what it is for another.
- Do your homework for each cultural group regarding critical cultural issues, before beginning the design process and holding forums:
  - Become informed before you start, so that you do not mistakenly present information that could offend anyone or any group. Example: don't create any products with images or understandings of cultural issues that may be related to the topic, but not accurate. This may lead to an offensive situation; i.e. showing an image of native dress to your Native American client, dress which may be native, but not of their clan or group, and that may be related to an enemy clan or group.
- Listen for critical design determinants.

**Key Features of Learning Environments**

*(*with examples taken from working processes with the Navajo):*

- Site design and relationships (relationships to Nature):
  - Open-space design *(*open, irregular arrangements [non-classical] and organic, circular planning motifs).*
  - Connection to transit systems/infrastructure *(*proximity to and view of [re: security] personal vehicles).*
  - Relationship to cardinal and sacred directions *(*East entry, orientations to the four Sacred Mountains of Dinetah).*
  - Solar access *(*tracking the movement of the Sun; i.e., the smoke hole in the Hogan)*
  - Outdoor spaces and places (**preferences for amphitheater-type spaces, recessed into the Earth*).

  - Buffering of undesirable environmental features *(* the cemetery; i.e., traditional Navajo do not speak of those who have passed).*
- Building massing and form
  - Relationship to the ground & sky *(* the smoke hole in the Female Hogan as an aperture to the sky and spirit world).*
  - Overall (symbolic) building forms *(*the form of the female Hogan directly influences the planning of many Navajo projects, both residential and institutional)*
  - Plan form *(* planning of spaces to reflect social/clan groupings; centered plans and spaces).*
- Spatial characteristics/outfitting (relating to cultural activities, i.e., eating, performance, etc.):
  - Exposed structural systems *(*wood structure).*
  - Wpecial, spatial features *(*the fireplace, fire pit).*
  - Provisions for display and performance *(*prominent display of achievements desirable, both modern and historical (the creation story; the Navajo struggle, imprisonment and the Long Walk).*
  - Provisions for food and entertaining *(* relates to access to the fire).*
  - Lighting *(*generous access to natural daylighting and views).*
- Decoration and ornament:
  - Finishes *(*organic, natural materials).*
  - Patterns and graphic symbolism:
    - *traditional Navajo rug patterns.*
    - *traditional Navajo sand painting motifs.*
    - *the four sacred colors (black, white, yellow, blue aqua.*
    - *animal symbolism.*
    - *plant material symbolism; i.e., for the Navajo – corn.*

## Implications for New Designs

- Advisors and staff must acknowledge different cultural and spiritual values as the social complexion of their classroom.
- Advisors and staff must be trained to tune-in to cultural values as a benefit to learning and positive group dynamics.
- Advisors and staff must be trained in facilitation and communications to engage all learners. One must know how to listen.
- The physical design of learning environments should support both specific cultural design objectives and universal design strategies.

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Kelly, K. B. & Harris F. *Navajo sacred places.*

Krinsky, C. H. *Contemporary native American architecture: Cultural regeneration and creativity.*

Rasmussen, S. E. *Experiencing architecture.*

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## *New Designs for Career and Technical Education*
## *Design Reviews No. 84*

### Sustainable Building Design

### Definition

Sustainability encompasses principles to meet the needs of the present without compromising the ability of future generations to achieve their needs and aspirations. Sustainability involves the analysis of community impacts, environmental impacts, and economic impacts to make intelligent life decisions.

Sustainable Building is an approach to the design, construction, and operation of buildings to enhance the community, reduce environmental impacts, and minimize life-cycle costs. Sustainable building encompasses a wide variety of topics and is typically organized into general categories such as site, water resources, energy use, materials use, and indoor environmental quality. Specific sustainable design strategies or principles might include designing interior spaces with optimal daylight to conserve energy and improve occupant comfort, installing low-flow fixtures to reduce potable water use, and selecting building equipment that does not use ozone-depleting substances. Sustainable building is also known as Green Building and is a subset of Sustainable Development.

### Key Features

- **Improved quality of life for building users and the surrounding community**–Buildings following sustainable principles are designed to address the quality of interior spaces and their effect on building occupants. The goal is to provide a comfortable, productive, and positive interior space that serves the needs of building occupants. Design of exterior spaces and their impacts on the surrounding community are also considered.
- **Reduced or eliminated detrimental impacts on the environment**–Sustainable building design principles aim to reduce environmental impacts such as global warming, energy use, potable water consumption, natural habitat destruction, and hazardous materials generation. Buildings designed to be environmentally friendly serve as positive examples for building occupants and the community at large.

This Design Review was prepared by Andy Karvonen for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

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- **Minimized building life-cycle costs**–Sustainably designed buildings are analyzed in terms of life-cycle costs instead of first costs. This means that all costs over the lifetime of the building are analyzed, including design, construction, operation, and maintenance expenses. This is especially important for schools because these facilities have longer lifetimes than other building types (often 50 years or greater). Even small operational savings can accumulate over these long lifetimes, resulting in significant life-cycle savings. This is especially true for building strategies that conserve energy and potable water.

### Impact on Learning

- Improved student and staff productivity. Sustainable buildings enhance the indoor environment through improved ventilation, thermal comfort, improved lighting levels, absence of toxic materials, proper acoustic design, and other measures. For instance, day-lighting studies in elementary schools demonstrate dramatic increases in student test scores. In addition, optimal indoor environmental quality can have other measurable effects such as reduced absenteeism and staff turnover.
- Reallocation of building funds to the educational program. By estimating life-cycle costs and reducing operational costs of buildings, schools can devote more money to the educational program. Modeling of building performance is often used to predict annual operational expenses to budget costs more accurately.
- Buildings as educational elements. Oftentimes, sustainable schools incorporate transparent building systems and "cut-away" building sections to teach occupants about sustainable design strategies. Occupants can learn basic building design strategies such as the interaction of structural elements residing in walls and pathways of sewage from sink drains to the sanitary sewer system.

### Implications for New Design

- Establishing commitment from top-level decision makers. As with all novel and emerging principles, commitment from top-level school decision makers is crucial for a sustainable building program to succeed. Commitment is most common from decision who that are willing to consider the long-term goals of the school in addition to short-term goals.
- Including all stakeholders in the design process. A sustainable design approach encourages participation from all building stakeholders, including students, faculty, facilities maintenance personnel, and administrators. It may also be useful to collaborate with outside parties such as regulatory officials and occupants of neighboring properties. Inclusion of stakeholders and interested outside parties focuses the design on the wants and needs of the building users, building operators, and the community.
- Adopting an integrated design team approach. The sustainable design approach examines buildings from a systems perspective, with building elements working in harmony instead of as discrete components. As a result, it is essential for the design team to work as a team instead of focusing on conventional discipline. For instance, a daylighting strategy for a school should include input from the architect (window size and room depth), the electrical engineer (lighting fixtures and dimming sensors), the mechanical engineer (predicted solar gains and resulting room conditioning requirements), and the civil engineer (exterior elements). Thus, the design team should be chosen carefully to maximize collaboration and promote innovative and robust design solutions.
- Establishing sustainability goals. To realize and quantify sustainable building strategies and principles, it is helpful to follow an established sustainable building rating system such as LEED or Natural Step. These rating systems generally include a combination of performance goals (e.g., energy use reduction of 20% when compared with a baseline building) and prescriptive goals (e.g., specification of certified wood instead of conventional lumber). By

using an established rating system, projects can ensure that a wide range of sustainable building principles is addressed. Rating systems also allow for comparison with other sustainably designed buildings and often provide information on real-world buildings to emulate.

- Analyzing life-cycle costs. Typical building projects use the overall first cost of a building's design and construction budget, expressed in dollars per square foot. This approach does not factor in operation and maintenance (O&M) costs of building components, costs that are much greater than first costs over the lifetime of the building. A more effective method for analyzing cost is to consider the life-cycle costs or the combination of first costs and O&M costs. When using life-cycle analysis, it is common to design some building components with a higher first cost but a lower life-cycle cost. Such components are described as having a payback period that represents the number of years necessary to recoup the additional first cost through operational savings. For instance, a resilient flooring material may have a higher first cost than a less resilient flooring material but reduced maintenance and replacement costs over the building lifetime make the resilient material cheaper from a life-cycle perspective. To analyze a building design using life-cycle costs, it is essential to establish an estimated building lifetime. It is also important to ensure that funding mechanisms for building design and construction can accommodate tradeoffs between first costs and O&M costs.

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Website resources for sustainability design in schools:
  Energy Smart Schools www.eren.doe.gov/energysmartschools
  Green Schools (DOE) www.ase.org/greenschools/about.htm
  Healthy Schools Network, Inc. www.healthyschools.org
  Innovative Design (Day-lit schools affects on energy and student performance)
  www.innovativedesign.net/
  Internet Resources for Campus Sustainability
  www.ac.wwu.edu/~zaferan/camp.sust.res.html

Sustainability rating systems or tools:
  LEED Green Building Rating System www.leedbuilding.org
  Minnesota Sustainable Design Guide www.sustainabledesignguide.umn.edu
  Natural Step www.naturalstep.org

Civic leaders in sustainable building:
  City of Austin www.ci.austin.tx.us/greenbuilder/
  City of Portland www.ci.portland.or.us/energy/peohome.html
  City of Seattle www.cityofseattle.net/sustainablebuilding/

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## *New Designs for Career and Technical Education*
## *Design Review No. 85*

## Features for the Learning Environment for Collaborative, Project-Based Learning

### Definition

Dede (1993) and Skolnikoff (1994) advocate active learning processes that move beyond the traditional classroom-based, learning-by-listening approaches to ones that are learning-by-doing and linked to everyday situations to prepare learners for the 21st century. Collaborative, project-based learning provides students with the needed skills and knowledge to participate more fully in the changing aspects of work, family, personal, and community lives. This learning process involves designing, developing, and producing products in the forms of information, service, or goods.

Billions of dollars are being spent for renovation of or building new public schools and postsecondary institutions. Herman Hertzberger, a well-known architect in The Netherlands, stated at the 2000 Innovative Alternatives in Learning Environments conference that the design of the physical learning environment dictates behaviors that occur within the facilities. If the physical environment is designed on models of the past, "old behaviors" are passed on for another 60 to 70 years. Existing physical learning environments designed to prepare learners for the agrarian and industrial eras do not adequately support the more active learning processes such as collaborative, project-based learning that are necessary for learners of and learning for the information and knowledge age (Wolff, 2002).

### Key Features

Design features of the physical learning environment identified by Wolff (2002) that support and enhance collaborative, project-based learning were placed in the following six categories:

1. **Size**–Include a variety of different-sized spaces to accommodate individual work and reflection, small- and large-group activities, team projects, large common gathering spaces, and teaching team space.

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2. **Activities**–Provide spaces that support individualized learning and reflection; group instruction; team learning; laboratories to discover, explore, practice, and use specialized equipment; project space; preparation for and presentation of acquired skills and knowledge as a means of assessment; and informal learning.
3. **Adjacencies**–Design spaces to encourage relationships with the community, link learners and learning activities, provide visual access to the learning process and the end results, provide visual connections to the external environment, include storage and supply space, and encourage access between learners and teachers.
4. **Furnishings**–Provide moveable, flexible, and comfortable furniture arrangements; a variety of surface areas such as tables and benches; durable finishes for floors and casings; display space, tack surfaces, and white boards; appropriate lighting for various tasks and activities; adequate storage for supplies and projects; personal secured space; and technology, including computers, facsimile machines, copiers, and telephones.
5. **Support**–Design spaces that provide a sense of belonging, ownership, and pride; access to food and beverage at times convenient to the learners, staff, and other users of the facility; places for quiet reflection and individual work; natural lighting; and adequate and secure bicycle parking and access to public transportation if available.
6. **Structure**–Design spaces in flexible and adaptable ways to accommodate a variety of learning and teaching styles and activities; rapid change in curriculum, learning and assessment processes; and to extend the useful life of the facility easily and at less cost.

## Impact on Learning

Collaborative, project-based learning and its supportive environment:

- Supports students' responsibility for their own learning and that of others.
- Includes spaces for informal learning.
- Encourages risk-taking and innovation.
- Teaches workplace, community, personal and family skills of teamwork, problem-solving, critical thinking, information seeking and management skills, interpersonal skills, communication skills, and the ability to work and live with diverse cultures.
- Provides practice and display or presentation of skills and knowledge gained.
- Models systems thinking.
- Includes community and business partners in learning and assessment.

## Implications for New Designs

- Align the physical learning environment with the learning context, audience, signature, expectations, process, organization, partnerships, staffing, accountability, celebration, and finance.
- Design learning spaces that elicit sense of ownership and pride.
- Design the physical learning environment to support multiple activities and users.
- Design facilities that support integration of curriculum, programs, learners, teachers, staff, and the community.
- Design the physical learning environment to model the workplace and community and social environments.
- Design learning spaces to support diversity.
- Provide adequate and flexible infrastructure to support current and future technology needs.
- Design the infrastructure to be easily adaptable to accommodate changes in learning in response to workplace and community needs.
- Design the physical environment to support relationships among people and spaces.

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## *New Designs for Career and Technical Education*
## *Book Summary No. 86*

### Schools That Learn*

**Major Premise**

Schools are the "fulcrum point" for educational and society change. Schools depend on the districts and communities around them; sustainable communities, in turn, need viable schools for their children and learning opportunities for adults. A learning school is not so much a separate place as a meeting ground for learning dedicated to the idea that all those involved will continually enhance and expand their awareness and capabilities.

**Major Themes**

The five learning disciplines (personal mastery, shared vision, mental models, team learning, and systems thinking) offer genuine help for dealing with dilemmas and pressures of education.

- Three components of the learning classroom (teachers, learners, and parents) exist in a cycle of mutual influence.
- Parents are essential partners in student learning; students work harder and learn more when they are involved in their own assessment.
- Every organization is a product of how its members think and interact.
- Learning is connection.
- Learning is driven by vision.
- Learning should be designed relative to the world in which we currently live.

**Implications for Learners**

- Development of the learner depends on the development of the staff in the learning system.
- The five learning disciplines should be incorporated at all levels of learning to nurture students' development and emerging capabilities of reasoning.
- Learning evolves from having little knowledge or skill to becoming knowledgeable and competent.

*Senge, P., Cambron-McCabe, N., Lucas, T., Smith, B., Dutton, J., and Kleiner, A. (2000). *Schools that learn: A fifth discipline fieldbook for educators, parents, and everyone who cares about education.* New York: Doubleday-Currency.

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- Student learning is tied to student perceptions of the respect they receive and their own sense of worth.

**Implications for Learning**

- Optimal learning involves close collaboration of the institution, the learner, and parents or significant others.
- Caring classroom environments improve learning while enhancing teachers' and learners' efficacy.
- Traditional models of teaching involve the transmission of information from teacher to student. Many schools have moved toward a generative model in which learners receive coaching through inquiry, exploration, and discovery. A third model is now emerging—transformative pedagogy, which builds on the generative model and extends it from the classroom to the world.
- Transformative pedagogy can create significant and enduring change by developing fundamental shifts in attitudes and beliefs about the nature of schooling, the social construction of learning, and how knowledge forms the basis for social action.

**Implications for Change**

- Change is only sustainable if it involves learning.
- Change starts small and grows organically. In nature, all growth follows a pattern: starting small, accelerating, then, gradually slowing until "full" adult size is reached.
- Pilot groups are the incubators of change.
- Significant change raises questions about the prevailing strategy and purpose of the organization.
- Successful change requires multiple layers of leadership roles. The context for change comes when people throughout the learning system become stewards of the system.
- Challenges are a natural part of change and signal that something is happening. If there are no challenges, very little, if anything, is changing.
- Awareness of the variables in the institution and of the system assist staff and learners to anticipate problems, make structural changes, and successfully achieve goals.
- Feedback, using available information, provides reinforcement in learning and behavior and can lead to exponential growth.

**Implications for New Designs**

- Define, regularly revisit, and refine guiding principles of the institution.
- Create change through shared learning opportunities.
- Replace central planning with local experimentation.
- Develop strategic partnerships to:
  - Assist with systemic change of learning across the life span.
  - Involve and empower the parents and community to seek unique solutions to learning issues.
  - Seek new structures that encourage involvement of all learning providers to create a coherent learning system.
- Look at learners through the lens of dignity, acknowledging that each one has value and deserves respect.
- Foster cultural norms of caring, respect for individual differences, high expectations in meeting standards, and success for all.
- Shift thinking from looking at learner's deficits to their strengths and then determine next steps.
- Schedule time for regular teacher/mentor/learner conferences to receive and give feedback.

- Reduce isolation of teachers/mentors by encouraging collaboration with other educators, service providers, and parents.
- Change policies affecting accountability, funding, program development and evaluation, supervision, and resource management in response to innovations and achievements in school communities.

## *New Designs for Career and Technical Education*
## *Design Review No. 87*

### Systems Theory

### Definition

Systems Theory (or the "new science") is the scientific belief of the 21st century that affects politics, economy, education, and society. It represents a profound change in perception and thinking about the universe, replacing the mechanistic foundations of Newtonian science with a holistic version of a self-regulating, self-organizing, complex network of interdependent parts. Ultimately, Systems Theory defines living nature as mindful and intelligent (Gaia theory sees the planet Earth as an integrated whole, a living being). In application, every organization or gathering of human beings constitutes a living system.

Systems Theory began to be considered seriously as a theory in the 1940s, and has strong support from cybernetics, chaos theory, and quantum physics. It is also known as dynamical systems theory, non-linear dynamics, network dynamics, and theory of complexity. There has been an explosion of systems thinking in every arena of human activity (Isaacs, 1999, p. 236).

### Key Concepts

- The whole is greater than the sum of the parts. The whole contains properties, which none of the parts have independently. Parts must therefore be understood in context and in relation to the other parts and to the whole. (Newtonian science divides things up, takes them apart to analyze and understand them.)
- An indefinable, invisible quality or energy (which Bateson, 1997, refers to as *mind*) communicates to each part and causes components to work together. (Cartesian science separates mind from physical body.) This connectedness exists even among seemingly discrete parts, widely separated in time and space. It travels faster than the speed of light. (Physics has traditionally claimed that nothing travels faster than the speed of light.)
- The whole is complex and interdependent. Every action on a part of the system has an effect on the whole of the system.

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- A living system is constantly changing; everything is in motion, all is a process. Things do not happen in a linear process; there are no direct arrows between cause and effect. Rather, there are patterns and relationships.
- Worlds come into being and exist simultaneously (Wolf, as cited in Wheatley, 1992, p. 36).

### Impact on Learning

Learning organizations are conscious entities possessing many of the properties of living systems. A living system is constantly changing; its characteristic is to continuously renew itself and to regulate the renewal process in such a way that the integrity of the structure is maintained. A change in a small place can create large-system change because it shares in the unbroken wholeness that unites the system. Acting locally is sound strategy for changing large systems (Wheatley, 1992, p. 42).

Nothing transfers: everything is new, different and unique each time (Wheatley, 1992, p. 7). No one learning method will work for everyone, all the time. No one strategy will always have the same result.

Learning will be cross-disciplinary, because there is overlap and integration with other departments and with the community. Therefore, there should be joint programming of course work and research, staff development and off-campus partnerships. Emphasis should be on experiential learning.

### Implications for New Designs

We ground our politics, economic theory, education, and societal values in the science of our times. Systems thinking represents different ways of seeing the world—of setting boundaries, governing, organizing, and decision-making. Therefore, the concepts of Systems Theory should be considered in leading a learning organization:

- Power is energy that flows through an organization. The nature of this power influences the workings of the organization.
- Change is not incremental; it is abrupt and discontinuous. Change cannot be *made* to happen, nor can it be managed. Instead, a leader must cultivate the conditions under which the organization might evolve and change.
- We must see beyond the innumerable fragments to the whole (Wheatley, 1992, p. 41). Welcome the diversity of voices and move to a new level of collective insight, a new language of wholeness.
- We should see how things move and change as a coherent entity: Stop describing tasks and instead facilitate process (Wheatley, 1992, p. 38).
- Rather than determining precise outcomes, planning, and analyzing details, look at the "structures that might facilitate relationships" (Wheatley, 1992, p. 43). Improvisation is a saving skill.
- Precede planning with action; we create the environment through our intentions (Weick, as referred to in Wheatley, 1992, p. 37). Move vision statements off the walls and into the corridors (Wheatley, 1992, p. 55).
- Create behavior that is congruent with the organization's goals through field meetings. Do not lock into rigid boundaries of pre-established end products
- Look at the overall structure, but also observe and understand the processes of change and growth—the systems dynamics, the relationships.
- Remain aware of the whole and resist the desire to analyze the parts to death (Wheatley, 1992, p. 43).

- Don't prohibit small, constant change, or local disturbances. Instead, provide a strong frame of reference (Wheatley, 1992, p. 95).
- Look for themes and patterns rather than isolated causes.
- Maintain a clear sense of identity—of the values, traditions, aspirations, competencies, and culture that guide the organization (Wheatley, 1992, p. 94).

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## *New Designs for Career and Technical Education*
## *Design Review No. 88*

## Chaos Theory

### Definition

Chaos Theory is a "perception of the world as an open system," where all is seemingly unreliable, unpredictable, and uncontrollable (Trygestad, 1997). However, what may seem random and unpredictable is actually representative of patterned behavior, responding to an implicate order. The system comprises interdependent and interrelated parts: Change in one area creates change in another. (The *butterfly effect* is a commonly used expression that refers to the implication that when a butterfly flutters in Japan, it can cause a storm in Texas.) Living systems have the capacity to respond to disorder, or non-equilibrium, with renewed life.

Chaos Theory's roots go back more than a century. It is an important tenet of Systems Theory and has been applied to natural and human systems.

### Key Concepts

- No act is isolated. Every action has an effect on the entire system. Unseen connections create effects at a distance, in places never even thought of.
- Open systems maintain a state of non-equilibrium—they remain off balance so they can change and grow.
- Deterioration is not inevitable; disturbances lead to growth. Resiliency is more important than stability.
- *Dissipative* structures dissipate their energy in order to recreate themselves into new forms of organization (Wheatley, 1992, p. 88).
- Disorder can play a critical role in giving birth to new, higher forms of order.
- Order is visible only over time and history. Left to develop and change randomly, nature creates complexity and harmony through patterns and relationships.
- *Probability* exists, but not complete predictability or certainty. There is no direct cause-and-effect, but rather a complex pattern of response.
- Parts and particles do not exist as independent "things," but only in relationship to something else. Individual parts cannot be analyzed in quantities, only in qualities.

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- The part *is* the whole, with the whole manifested through each part. This phenomenon is known as a fractal. All parts of a whole, and the part itself, reduce, infinitely, to fractals.

### Impact on Learning

Scientific methods and concepts are imbedded deep within our collective unconscious (Wheatley, 1992, p. 141). The mechanistic, linear Newtonian view of the world as being made up of cause-and-effect relationships has greatly influenced education over the last century, with its "one-size-fits-all" stereotype and expected predictability of results.

Chaos theory impacts learning in the classroom, as noted by JoAnn Trygestad (1997), in the following ways:

- Reinforces systemic approaches to human interactions, emphasizing relationships and networks.
- Encourages cultural diversity as beneficial and necessary.
- Reaffirms theoretical notions of learning and intelligence as dynamical and multidimensional, without linear progression.
- Confirms learning process is fluid, non-linear, and dynamic—needing change, conflict, and diversity.
- Requires an evaluation that is patterned, flexible, and holistic to assess learning.

Another application to learning is that chaos theory implies an awareness that everything is in motion, in process, and that whatever the situation, it will change.

### Implications for New Designs

Chaos Theory is particularly useful as a model for leading a learning organization. These concepts and values can be applied to all aspects of the organization, including the classroom:

- Fractals have direct application to the leadership of an organization (Wheatley, 1992, p. 132)—all members are a reflection of the organization as a whole.
- Leaders must learn to trust in the natural organizing phenomena of guiding principles and values that influence behavior and shape organizations "through concepts, not elaborate rules" or structures. This is achieved through "maintaining focus rather than hands-on control," and retaining clarity of purpose and direction (Wheatley, 1992, p. 133).
- Leaders must step back from problems to gain perspective—and see the forest as well as the trees. Look for themes and patterns, rather than isolated causes.
- Planning begins with a distillation of the institution's key values and purposes.

The following implications for strategic planning in higher education, identified by Marc Cutright in 1996, can also be applied to New Designs: [Page numbers indicate the page of the document that discusses the idea.]

- Planning begins with a distillation of the institution's key values and purposes (p. 7).
- The ideal outcome of planning is planning (p. 7). Linear patterns do not work in strategic planning (p. 11).
- The widest universe of information should be made available to all members of the organization (p. 9). This universe includes ongoing rich and current feedback (p. 9).
- Dissent and conflict are creative, healthy and real. Organizations should budget physically and psychically for failure (p. 12).
- The executive is not demoted or minimized, but is ultimately empowered by the process (p. 13).
- The future cannot be predicted beyond a modest time frame (p. 14).

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## *New Designs for Career and Technical Education*
## *Design Review No. 89*

### Self-Organized Learning

### Definition

Historically, the concept of self-organization, or self-organizing systems, has evolved from studies ranging from constructing mathematically defined neural networks that explain the logic behind behavior (McCulloch and Pitts, 1943), to the concept of order (Lorenz,1997). More recently, it includes the creation of new structures and new modes of behavior in the self-organizing process, of systems operating in equilibrium and even chaos, and in nonlinear patterns (Capra,1996). Self-organization is a concept that views learners and organizations as living, vibrant and ecological systems, with a focus on sustainable change and growth.

*Self-organization*–The spontaneous emergence of new structures and new forms of behaviors in open systems far from equilibrium, characterized by internal feedback loops and, in some cases, described mathematically by nonlinear equations (or processes). (Capra, 1996).

*Self-organization*–The evolution of a system into an organized form in the absence of external constraints. (Lucas, 1997).

### Key Features

Capra (1996) uses the study of ecosystems to form the basis and theoretical foundation for the premise that all things self-organize, even human systems. In his view, learning is looked upon as a living system consisting of 6 important features:

1. **Interdependence**–The ability to constructively depend on one another for growth and change, for expanding one's perspective and for increased acquisition of new knowledge; the forming of networks, teams, and collaborative processes. We consume (in an ecosystem, for example, fish literally eat each other) knowledge as food from each other.

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2. **Relationships**–The connections between individuals and groups. Relationships are defined by those specific configurations that have developed between these networks. The study of relationships leads you to the study of patterns. A pattern is a configuration of relationships appearing repeatedly. Such patterns are seen in our workplace, classrooms, and communities. By themselves, they create their own unique culture that defines who or what they are.

   With science we try to measure and weigh? Not here…relationships need to be mapped…and when you do this, you begin to notice various configurations of relationships or patterns of how individuals learn; of multiple intelligences (Gardner,1993), and ways individuals learn optimally (metacognition).

3. **Form (Process) and Substance (Content)**–Substance refers to what an object is made of. In respect to learning and knowledge, the substance of what is learned is generally the content of information imparted by the instructor or knowledge source. Now the study of form asks the questions: "What is its pattern? What is the process that allows this content to be learned?"

   Learning takes the form of mapping or drawing things out, feeling them, experiencing the process. Examples are having learners construct (Constructivist theory) their own meanings from content (substance) learned, creating visual designs, pictorial representations of their thinking and understanding of content, using metaphors to describe, and forming their own definitions

4. **Non-Linear Patterns**–Patterns are non-linear by nature and form non-linear relationships; in essence, a network that can go in many directions. If these non-linear relationships network across the system (learners interacting with each other), and providing feedback to each other (feedback loops), the result is self-regulation (learners directing their own learning (Zimmerman and Pons, 1992).

   So, a community of learners can organize itself and can learn. A community has its own intelligence, its own learning capability, its own networks…so, as soon as you understand that life is networks, *you understand that the key characteristic of life and learning is self-organization.*

5. **Cooperation/Cooperative Learning**--Working together to accomplish shared goals. Cooperative learning is the instructional use of small groups/teams so that learners work together to maximize their own and one another's learning (Johnson & Johnson, 1990. In cooperative learning processes, feedback and communication are essential.

   Allowing for trial and error situations, for structured failures; for time in class to practice and hone in on newly developed skills, with time for mentoring learners; and structuring times for peer review processes all form a cooperative and collaborative learning environment.

6. **Diversity**–Diversity means many links, perspectives, persons, learning styles, and many approaches to the same problems. Diversity assumes openness and inclusion at all times. Diversity assumes there is a network of relationships and a *flow of information through all the links of the network.* If there is fragmentation, if there are *subgroups* in the network, or individuals who are really *not included* in the network (or don't want to be there), then diversity will generate prejudice, friction, and in large settings, such as in our cities, rage and violence.

## Impact on Learning

- Learners become highly motivated.
- Learners construct their own meaning for application to real life settings.
- Learning occurs with a high rate of efficacy.
- Learning becomes self-regulated and self-directed.
- Learning becomes a lifelong endeavor for all.
- Learning is reciprocal–teacher and student become mutually accountable for their learning.
- Learning becomes a systemic process that is shared by individuals, organizations, and communities together.

## Implications for New Designs

The theory of self-organized learning is directly related to the design of instructional systems and performance-based curricula. Sustainability of effective learning communities requires a systemic perspective that focuses on what learners can do, not simply on the content of knowledge. The implications are:

- Schools and classrooms will be designed to put the learner in charge of the learning process, not the teacher or administrator.
- Learning will be continuous, everywhere, anytime, and accessible to all.
- Design of instructional systems must focus on outcomes that center on "what one can DO" not on what knowledge one acquires—a performance-based/outcomes-based model (as compared to the competency model).
- Educational institutions, businesses and communities should accept that all things are by their very nature self-organizing…that change is a way of life, and inherent here is a certain amount of chaos that drives its own re-organization, or simply its self-organizational process.
- Curriculum (instructional) content and disciplines must be integrated as a whole (systemic).
- Communities (including schools, social service agencies, companies and corporations) must function as a network of partnerships and relationships, thus sharing the challenges of learning of its members.

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## *New Designs for Career and Technical Education*
## *Design Review No. 90*

## Corporate Creativity

### Definition

Corporate creativity happens when employees do something new and useful without being directly shown or taught. The results of corporate creativity can be either improvements or innovations (Robinson & Stern, 1998).

Traditional thinking about creativity has been influenced by two pervasive myths. The first is that creativity is associated with the extraordinary activity by artists, scientists, and researchers, while ignoring the creativity of others such as those who participate in vocational and technical education. A second myth is the belief that creativity is a magical event that can best be nurtured through freethinking exercises. Current research shows that creativity in a corporate context is collaborative, involving people from *all* levels of an organization (Bennis & Biederman, 1997; Robinson & Stern, 1998). Furthermore, freethinking exercises (such as brainstorming) have been found to be remarkably ineffective in promoting creativity in the workplace (Weisberg, 1993; Robinson & Stern, 1998).

### Key Features

- The following are features of a work environment that promotes creativity:
- **Alignment**–Making sure employees know the company's key goals and can recognize which ideas are most likely to be implemented.
- **Self-initiated activity**–Allowing employees to suggest and follow up their ideas.
- **Unofficial activity**–Giving employees time to refine their ideas before they get company sanction.
- **Serendipity**–Encouraging employees to tinker, and to understand that accidents can lead to discoveries great and small.
- **Diverse stimuli**–Exposing employees to different professional experiences.
- **Internal communication**–Giving employees ways to share their insights and discoveries with others inside the company.

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## Impact on Learning

Identified as essential to economic development and international competitiveness, the graduates of career and technical education (CTE) programs are expected to work both efficiently *and* creatively as they encounter new situations and problems (U.S. Department of Labor, 1991). However, traditional CTE educational materials and instructional approaches either ignore creativity or, worse yet, are based on common, yet flawed, perspectives. There is a clear need to provide CTE students with real-world examples of creativity and provide them opportunities to develop skills that are associated with creativity.

## Implications for New Designs

- Business and industry representatives should work with CTE programs to provide information and awareness of real world examples of creativity.
- CTE learning materials should include real world examples of creativity and identify factors (skills and work conditions) that contribute to creativity.
- CTE staff should include open-ended (no single answer) elements in their learning activities.
- CTE students should have opportunities to propose ideas, and review and elaborate on the ideas of others.

## A Case Study in Technician Creativity

Consider the following story, an example of technician creativity that could serve as the basis for a rich case study and CTE instructional activity:

> *In January of 1998, the inkjet business unit of Hewlett-Packard started a new print head production line in their Corvallis, Oregon facility. The new line, dubbed the Nitro Assembly Line, was made up of about a dozen modules that performed a variety of advanced manufacturing and test operations twenty-four hours a day, seven days a week, producing 700,000 pens a month.*
>
> *The demand for the pens was especially high, and the cost of downtime was estimated at $11 a second – more than a $1,000 loss in just a minute and a half of downtime. When the line went into production, an intermittent problem surfaced in one of the modules. Symptoms of the problem surfaced in a module that performed a pressurized leak test on an ultrasonic weld. As part of the highly automated process, stainless steel mechanical fingers would pick up automatically fed print heads. Every now and again (11 times in 4 months), the print heads would be miss-oriented when they were fed into the module. When the gripper tried to pick up the miss-oriented print heads, one of the metal fingers would break. The engineer responsible for the line, was aware of the problem, and was searching for the root cause. Meanwhile a technician on the night shift was getting tired of fixing the gripper, and had an idea that might make it possible to make the fix in a matter of minutes.*
>
> *The idea was simple and somewhat counter-intuitive. His thought was to make it easier for something to break – something other than the expensive hard-to-replace fingers. He first tried using a lathe to cut a breakaway neck on the stainless steel screws that held the fingers in place. His thought was to use the screws as a "sacrificial strawman," something that would break before the fingers. Cutting the neck on the existing screws didn't work the way he had hoped, but he suspected that he was on the right track. So, rather than using the existing screw, he thought about using a weaker nylon screw.*

> *But the technician with the idea wasn't the "curator" for this particular module. At this facility, each technician had responsibility for being the curator for one module, and was prepared to repair up to 14. The curator for this module worked on the day shift. So, the night shift technician sent an e-mail note to the day shift technician and the engineer responsible for the Nitro line.*

Before we continue with the story, stop and consider the instructional possibilities. Manufacturing technology students could assume the role of the night shift technician and write an e-mail note to the day shift technician and engineer. Through the preparation of the e-mail note, they would have to propose the idea clearly, and in a way that is likely to gain the cooperation of both the dayshift technician and engineer. Other students might play the role of the dayshift technician and engineer. Following the e-mail communications, students (with assigned roles) might meet in small groups to discuss the idea and its implications. As a whole, the class could then discuss the case and its implications. Let's return to the story and see how it unfolded:

> *The day shift technician replied with a curt e-mail note saying they were working on the problem – in other words, butt out. However, the engineer, was intrigued with the idea and suggested that the night shift technician try it out to see how it would work.*
>
> *In another e-mail note to engineer, the night shift technician described his thoughts about the nylon screw. The engineer suggested that he look through some catalogs and order a few. When the screws arrived, they tried them and found ones that would hold the fingers in place during normal operation, and would break when one of the print heads was miss-oriented.*

Here is yet another instructional opportunity. Creative activity necessarily involves resistance. Students could have the opportunity to assume the role of night shift technician and prepare a second e-mail message. Other students could assume the roles of the threatened dayshift technician or encouraging engineer. To stimulate discussion, the instructor could present several alternative scenarios. What would happen if the engineer was threatened and resisted the idea while the other technician was encouraging? What would happen if both the technician and engineer resisted the idea? Back to the actual story:

> *The problem continued to occur every month or so, and, when it did, the technicians were able to fix it in about ten minutes, by simply replacing the 4 cent nylon screws. Everyone was happy to see the expensive downtime reduced, but the engineer had mixed feelings about what had happened. He, too, was pleased to be able reduce down time, but he felt badly that he had never had been able to locate the root cause of the problem.*

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## *New Designs for Career and Technical Education*
## *Design Review No. 91*

### Electronically Delivered Student Services

#### Definition

As institutions have initiated electronic distance education (EDE), the first priority has typically been to establish the academic courses and programs (Kendall, Moore, & Smith, 2001). Comprehensive distance education extends well beyond putting courses or academic programs online. Electronically delivered student services is defined as online, modem, Internet, or Web-based delivery method of support services characterized by separation of learner and educator.

Student services is a key but often neglected component of student success (Moore, 2000), providing deeper teaching – for character development, interpersonal competence, and vocational choice (Fried, 2000; Lloyd-Jones & Smith, 1954). Historically, student development practitioners have been responsible for assessing, planning, and implementing services, programs, and advocacy efforts that extend the educational opportunities of college students. While student services vary by student needs and expectations, there are core services that are beneficial to all distance learners as well as many traditional on-campus students. These include such core services as admissions, registration, and payment options; other services could be outsourced to provide services to students when needed (Chaloux, 2001).

#### Key Features of Electronically Delivered Students Services

- Electronically delivered student services meet the same high standards of accessibility and quality as traditionally delivered services.
- Current technology allows student services to be delivered electronically from a distance and at times more conveniently to the student, saving distance learners time and effort in finding or developing their own resources.
- Core student services for distance education may be different from campus-based services and should provide a baseline set of services that include admissions, registration, and payment functions (Blount, 2002).

Design Review prepared by Joanna F. Blount, Ed.D. for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

This design review was prepared as part of the project, New Designs for Career and Technical Education at the Secondary and Postsecondary Levels, which is a part of the program of work for the National Research Center for Career and Technical Education headquartered at the University of Minnesota and funded by the Office of Vocational and Adult Education in the U.S. Department of Education, PR/Award (No. V051A990006.) However, the contents do not necessarily represent the positions or policies of the Office of Vocational and Adult Education or the U. S. Department of Education, and you should not assume endorsement by the Federal Government. This project was directed at Oregon State University, a partner institution in the National Center. The Project Director is George H. Copa, Professor, School of Education, Oregon State University, Corvallis, Oregon. For more information, see the website for New Designs for Learning at Oregon State University at http://newdesigns.orst.edu. This design review is part of a larger series of reviews presented in the report: Wolff, S. J., & Copa, G. H. (2003). *New designs for career and technical education at the secondary and postsecondary levels: Compendium of design reviews of related research, policies, and exemplary practices.* Minneapolis, MN: National Research Center for Career and Technical Education, University of Minnesota. The full report is available on the above website.

- The equality and availability of these [student] services serve as the foundation for each student's success and substantially influences the student's view of what follows. The coupling of online student services with quality instruction improves access for students and fosters their success (Darnell, 2000).
- Acknowledging the changing needs of student learners does not "denigrate our long-standing commitment to student development" (Moneta, 2001, p. 2).

**Impact on Learning**

- The Web has become an integral part of the college experience. Staff need to provide a place that connects students with distance-learning services and courses (Haney, McClellan, & Kelly, 2001).
- Student services professionals must recognize that students traditionally excluded from post-secondary education are the most dependent on face-to-face interaction and the least able to deal with the frustration and isolation of distance education.
- One-on-one interaction and the ability to form connections lowers attrition rates and helps students feel engaged (Haney, McClellan, & Kelly, 2001).
- Orientation efforts must now include assessment of technical skills, basic training for technical requirements, and hardware and software standards in addition to college policies and procedures, students' rights and responsibilities, and services available to students (Blount, 2002).
- Gunn (2000, p. 2) indicated "there are no office hours on the Internet." Students send e-mail requests and access services 24 hours a day. Student services personnel must have a plan for coping with the sudden influx of e-mails received.

**Implications for New Designs**

- Providing electronically delivered student services requires organizing learning and staff in ways to offer equitable services via distance to all learners – not just those students using Electronically Delivered Education (EDE) but also to on-campus students seeking the convenience of online services. It is important to note that equitable service does not necessarily mean identical services.
- Developing and sustaining critical systems and infrastructure that supports educational outcomes for EDE requires an on-going commitment by educational leaders and staff.
- Developing student support services before or at the same time as academic components provides the infrastructure for an ongoing and sustainable learning process via distance.
- Identifying policies and practices that ensure proper student identification and security of administrative and student records is essential.
- Eliminating ambiguity of institutional policies and procedures resulting from not keeping pace with growing popularity of online learning requires review of institutional practices.
- Reducing institutional barriers such as limited support services, on-campus only services, unfriendly information, and fixed or limited hours of operation increases student success.
- Training of staff to provide electronically delivered student services requires technical training as well as procedural training (e.g., accessibility issues and working with special populations). Accessibility is not a separate issue and should be incorporated into the initial and ongoing phases of creating, designing, updating, and maintaining Web sites, courses, and services (Watson, 1998).
- Resolving the ongoing conflict of researcher versus practitioner with respect to EDE requires knowing when to use the professional filters of the practitioner and when to "hear" the students from a researchers perspective (Blount, 2002).

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Haney, L.R., McClellan, D. & Kelly, D. (2001). *Creating four-year degree opportunities at community colleges through distance education partnerships: The distance education center at Frederick Community College.* Paper presented at the NASPA 2001 Conference, Seattle, WA.

Kendall, J.R., Moore, C., & Smith, R. (2001). *Student services for distance learners: A critical component.* Retrieved April 9, 2001: http://www.naspa.org

Lloyd-Jones, E., & Smith R. (Eds.) (1954). *Student personnel work as deeper teaching.* New York: Harper & Brothers.

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## Learning Environment

Butin, D. (2000). *Teacher workspaces.* Washington, DC: National Clearinghouse for Education Facilities.

Well-designed and equipped teacher workspaces can enhance communication among teachers, promote a sense of professionalism, and increase effectiveness in planning. Teacher workspaces are typically designed as either classroom-based or office-based. Classroom-based workspace design reflects the trend toward more personalized learning and the changing role of the teacher to that of a facilitator or guide. The office-based workspace becomes home base for teams of teachers who share classroom spaces and learning activities. Research shows that when teachers share space, their increased collaboration and interaction spills over into the classroom and has a positive impact on student achievement.

Dewees, S. (1999). *Improving rural school facilities for teaching and learning* (Report No. EDO-RC-99-8). Charleston, WV: ERIC Clearinghouse on Rural Education and Small Schools. (ERIC Document Reproduction Service No. ED438153).

Almost half the nation's 80,000 public elementary and secondary schools are located in rural areas or small towns and play an important role as community center and a symbol of community pride. Age-related building problems are often more difficult to address in rural areas due to funding linked to enrollment, lower property value assessments, and less inclination to fund improvement projects. Another aspect of aging rural facilities is inadequate infrastructure to support the use of technology which, if available, reduces isolation from print resources and professional and curriculum development opportunities. Improvements may be available through targeted dollars from Congress for the improvement of rural school facilities and through innovative community partnerships.

Leider, S. (1998). *Successfully integrating technology* (Report No. EDO-JC-98-12). Los Angeles, CA: ERIC Clearinghouse for Community Colleges. (ERIC Document Reproduction Service No. ED422989).

Successful integration of technology into the community college classroom depends upon the willingness of faculty to incorporate the use of technology in delivering instruction and enhancing learning. Faculty development and training in the use of technology can be offered in a formal way or through faculty mentorship. When faculty take leadership in adopting and selecting technology for the teaching/learning process, rather than administration, the results in both the teaching and learning processes are improved.

National Clearinghouse for Educational Facilities. (1999). *Design principles of planning schools as centers of community.* Washington, DC: National Clearinghouse of Educational Facilities.

Architects, planners, school board members, teachers, and representatives from federal agencies established six principles for involving parents and community members in planning schools as centers of communities. The principles are: (a) enhance teaching and learning and accommodating the needs of all learners; (b) serve as a center of the community; (c) base results on a planning/design process that involves all stakeholders;

(d) provide for health, safety, and security; (e) make effective use of all available resources; and (f) allow for flexibility and adaptability to changing needs.

Wagner, J.O. (1995). *Using the internet in vocational education* (Report No. EDO-CE-95-160). Columbus, OH: ERIC Clearinghouse on Adult Career and Vocational Education. (ERIC Document Reproduction Service No. ED 385777)

The Internet provides links for students and teachers in ways that were not available before. Beyond the use of electronic mail systems for communication and access to research and resources, the Internet reduces time and eliminates geographic and cultural barriers. Students are now able to engage in learning with experts of subject matter, in business and economic development enterprises, and with other students around the globe.

# Design Reviews for the Learning Accountability

## *New Designs for Career and Technical Education*
## *Design Review No. 92*

### Assessments and Accountability

**Definition**
Legislative mandates, policies adopted by state or local boards of education, and ideological shifts have all affected the use of tests and assessments in the last five decades. The effects from the reform efforts are listed below.

**Key Features**
- 1950s tests used for tracking and selection–emphasis on a universal elementary education, comprehensive secondary education, and a highly selective meritocratic higher education.
- 1960s tests used for program accountability–attention shifted to compensatory education and the reduction of disparity in educational opportunities and performance.
- 1970s tests for minimum competencies–focus on the lower end of the achievement distribution. Minimal basic skills were widely accepted as a reasonable requirement for high school graduation.
- 1980s tests used for school and district accountability–beginning of movement toward high stake student requirements.
- 1990s tests derived from standards based accountability systems–increased real or perceived high stake teacher and administrator requirements.

Salient characteristics of reform efforts in the late 1990's leading to more current efforts include the following:
- Standards are central to the Clinton Administration's Goals 2000: Educate America Act.
  - States will be the key players in the standards-based reform efforts.
  - States will develop demanding content and performance standards.
  - States will develop standards-based assessments and reporting.
- Content standards can, and should, influence both the choices of constructs to be measured and the ways in which they will be measured.

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- Content standards have dual goals of the same high-performance standards for all students.
- Accountability will move away from input regulation; (i.e., number of books in the library), to a model of steering by results using rewards, sanctions, and assistance.
- President Clinton's "Call to Action for American Education in the 21st Century" requires that students demonstrate what they have learned in order to move from one level to another and put an end to social promotion.

Reform efforts in the early 2000's continue to stress standards, testing, and accountability (American Federation of Teachers, 2001) with a push for states to do more in regards to developing curriculum to support their standards, using high-quality tests, aligning their tests to state standards, and providing additional funds to assist students who are failing to meet the standards (p. 5). In 1997, only 13 of the 50 states had high school graduation exams based on 10th grade standards or higher, but by 2001 the number of states with clear and specific standards had increased to 29. According to the American Federation of Teachers (AFT) (2001), more states are:

- Giving greater emphasis to academics.
- Paying attention to the educational needs of students at risk of failure to meet the standards.
- Undertaking formal studies to align their standards and assessments, and to benchmark their standards to external models of excellence.
- Providing more incentives to encourage students to reach higher standards;
- Making more instructional material accessible to teachers via the Internet.

Recommendations to the states to maintain the standards based reform efforts include :
Explain the standards and performance levels that have been set.
Compare their standards, assessments, and results with other countries who have high performing students.

- Provide examples of standards and student work at the various levels so students, teachers, and parents know what is to be expected.
- Support teachers in developing curriculum to meet the standards.
- Examine policies and practices related to assessment to allow sufficient time for implementation and promote multiple tools for assessment.
- Reward achievement of the standards.
- Provide sufficient resources to meet the goals of the states' education reform efforts.

**Impact on Learning**

- Maintain focus on student learning and development, rather than on the tests.
- Ensure that all learners have adequate and equal access to human and material resources to support their efforts.
- Determine what gaps in support may exist and develop plans to eliminate deficiencies.
- Assist students in understanding the necessity for high standards in that meeting the standards will help them succeed and continue that success in further education or in the workplace.

**Implications for New Designs**

- Participate in leadership efforts in determining appropriate standards for local states and districts.
- Focus on curriculum development first and then develop the tests.
- Provide support in terms of time and materials for teachers and faculty to revise curriculum and assessments to meet the standards.

- Work with local, state, and national business and labor to set high standards for learning (e.g., incorporate National Skill Standards and Career Cluster work into state standards, curriculum, and assessments).

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## *New Designs for Career and Technical Education*
## *Design Review No. 93*

### Perkins III Accountability*

### Definition

Vocational education is increasingly seen as a critical component of larger education and workforce development systems by federal and state policy-makers. The Carl D. Perkins Vocational and Technical Education Act of 1998 (Perkins III) includes two major accountability sections, Section 113 Accountability, and Section 123 Improvement Plans. The law was written to optimize the return on the investment of federal funds in vocational and technical education. In doing so, four core indicators of performance and accountability were established that must be followed by each state for reporting purposes; however, each state was also allowed flexibility in designing services and activities that meet the needs of their students and communities.

By using common reporting systems, data collection and reporting requirements will be lessened for state agencies, school districts, and higher education institutions that receive funding from multiple systems. Consistent performance measures and data are more understandable and useful for parents, students, and policy-makers. The first goal of the Perkins III legislation is to align vocational and technical education with state and local efforts in secondary school reform and improvement in postsecondary education. The second goal is to promote the development of seamless education and workforce development systems at the state and local level.

The Perkins III legislation took past efforts to develop accountability measures and has established common and consistent measures to create clearer understanding of cost benefits of federal dollars allocated for vocational and technical education. Incentive grants are awarded to states that exceed the established performance levels for Perkins III, the Adult Education and Family Literacy Act, and the Workforce Investment Act. By establishing common and consistent data collection and performance measurement approaches, education institutions and other providers reduce duplication of effort in collection and reporting of information. The framework

*Haigh, J. (2001) *Perkins III accountability primer*. Washington, DC: U.S. Department of Education, Office of Vocational and Adult Education, Division of Vocational Technical Education.
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ensures sufficient rigor and comparability among state performance accountability systems and defines performance and data collection approaches that are more easily integrated into state and local performance management systems.

## Framework of Perkins III

The Core Indicator Framework of the Perkins III legislation was established by the Office of Vocational and Adult Education (OVAE), the Department of Labor, states, and shareholder organizations. The framework supports the following common performance accountability systems:

- **Performance measures**–Including common terminology and operational definitions.
- **Measurement approaches**–Including shared or consistent student assessment, data collection, and data management systems.
- **Continuous improvement approaches**–Including setting and adjusting annual performance targets, and establishing and managing continuous improvement systems.
- **Reporting system definitions**–Including student or participation and service definitions.

## Key Features

The four core indicators are:

- **Student Attainment**–Secondary and postsecondary academic and vocational and technical skill attainment.
- **Credential Attainment**–Secondary completion, proficiency credential with secondary diploma, and postsecondary degree or credential.
- **Placement and Retention**–Secondary and postsecondary placement and retention.
- **Participant and Completion of Non-Traditional Programs**–Participation and completion in non-traditional programs.

The quality criteria for state performance measures are:

- **Validity**–Measurement of student outcomes at an appropriate time interval, use of measurement approaches that have strong content validity and produce valid data, and freedom from bias by race, gender, or special need.
- **Reliability**–Use of standardized or consistent data collection instruments, and effective management information systems that insure data quality.
- **Cost-Effectiveness**–Use of shared measurement approaches and data collection systems that provide high quality data at low cost.
- **System-Focused**–Use of common and consistent data collection and measurement approaches with other education and workforce development systems.
- **Management Utility**–Use of measurement approaches that provide for continuous improvement, are easily understood, and provide timely data.

## Impact on Learning

Perkins III focuses on a threshold level of vocational education, which refers to programs and sequence of courses or instructional units that provide an individual with the academic and technical knowledge, skills, and proficiencies to prepare the individual for employment and/or further education. The legislation requires the following:

- All states report student information on all students participating in vocational education, however the Core Indicator Framework only applies to those students identified as vocational concentrators, who are enrolled in a threshold level of vocational education.
- Students enrolled in Non-Traditional Programs both at the secondary and postsecondary levels are to be reported when enrolled in at least one vocational-technical course.

- Placement and retention information is required of only those who are identified as vocational completers, who have attained the academic and technical knowledge and skills proficiencies in their programs and sequences of courses.

### Measurement Approaches

Measurement approaches, baseline information, and performance level indicators addressing career and technical education include the following:

- Integration of academic and vocational courses.
- Vocational courses with imbedded academic foundations.
- National or state-developed standardized assessments for all learning including licensing and certification examinations.
- National, state, and local assessments developed and recognized by national, state, and local organizations.
- Program completion includes high school diploma or other state-accepted benchmark, two-year college degree, and shorter-term licensing, other credentials, or certificates indicating attainment of career and technical skill standards.
- Student records are to be maintained locally as either individual records or aggregated program or school-level data.
- Baseline data includes available data based on the states' definitions, chosen performance measures, and numerators and denominators for each of the sub-indicators of the four core indicators. OVAE requires that this baseline data include raw numbers for both the numerator and denominator figures used for reporting.

### Implications for New Designs for Career and Technical Education

- Federal legislation has clear priority to improve accountability for Career and Technical Education (CTE) across the nation.
- Student attainment, credential attainment, placement and retention, and participation in and completion of non-traditional programs are central and minimal accountability indicators for CTE.
- Accountability needs to be linked to continuous quality improvement and finance.
- Perkins III legislation calls for integration of academic and CTE education (Grubb, 1999).
- Definition of the terms "completion" or "completers" have become more fluid at the postsecondary level as learners define their own educational needs and the rate of "reverse transfers" has become a high-growth portion of the student population (Rosenfeld, 1999).

### Additional References

Grubb, W. N. (1999). *Edging toward effectiveness: Examining postsecondary occupational education.* National Assessment of Vocational Education Independent Advisory Panel Meeting.

Rosenfeld, S. A. (1999) *Linking measures of quality and success at community colleges to individual goals and customer needs.* National Assessment of Vocational Education Independent Advisory Panel Meeting.

## *New Designs for Career and Technical Education*
## *Design Review No. 94*

### Pilot Projects on Perkins Accountability[1,2]

**Definition**

Pilot projects at both the secondary and postsecondary levels were undertaken by the Office of Vocational and Adult Education (OVAE) and selected states to determine the effectiveness and comparability of data collected and reported, based on the Core Indicator Framework.

The Framework was developed from the Carl. D. Perkins Vocational and Applied Technology Education Amendments of 1998 (Perkins III) that requires significant federal and state commitment to performance measures and accountability. The framework identifies purposes and construction of each core measure, provides possible data collection and measurement approaches, and presents quality criteria and scoring rubrics for the improvement of the states' accountability systems. Eight states were involved in the secondary project and ten states in the postsecondary project.

**Key Features**

These pilot projects were a collaboration of the states and OVAE to:

- Identify states' capacities to provide data for each of the core indicators of performance.
- Determine differences in state definitions of threshold levels and performance measures.
- Evaluate the sensitivity of performance results to these state differences in definitions.

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[1] Castaldi, R. & Schray, V. (2000). *Findings from the secondary pilot project on accountability: Building a performance measurement system for vocational education*. Washington, DC: U. S. Department of Education, Office of Vocational and Adult Education.

[2] Castaldi, R. & Schray, V. (2000). *Findings from the postsecondary pilot project on accountability: Building a performance measurement system for vocational education*. Washington, DC: U. S. Department of Education, Office of Vocational and Adult Education.

This Design Review was prepared by Susan J. Wolff, Ed. D. for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

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**Project Findings**

Issues that should be addressed based upon the findings of the pilot projects include:

- **Developing a consistent definition of vocational concentrators**, defined by OVAE to be those who have participated in sufficient programming and for whom the states took responsibility. The study showed that states were using the following criteria for secondary students to identify vocational concentrators:
  - A sequence of courses in a specific vocational program area.
  - A capstone course in a vocational program area.
  - A specified period of enrollment in vocational coursework.

  For postsecondary students the criteria were:
  - Enrollment in a 2-year program–vocational or liberal arts.
  - Statement of intent to complete a program.
  - Time enrolled in a vocational program area.
  - Number of credits completed in a vocational program area that ranged across the states from one course to 75% of the credits needed to complete the program.

  The states will need to build consensus around a consistent set of definitions and terms and may involve identifying clusters of states using similar strategies to classify vocational concentrators.

- **Employing comparable procedures for calculating performance measures** begins with defining student populations in similar ways. The findings indicated that currently the states are reporting vocational concentrators using different subsets of those enrolled in vocational programs that do not overlap, which results in under-reporting. Administrative record systems may also limit state reporting, especially at the postsecondary level where there is difficulty tracking students who transfer to public or private institutions within their states and those who transfer out-of-state. To ensure accuracy of state performance levels and the magnitude of the vocational enterprise, OVAE recommend using the following numerators and denominators for reporting each of the Core Indicators:
  - **Core Indicator 1**: Academic and Occupational Skill Attainment
    Numerator = vocational concentrators who attain a specified skill level
    Denominator = vocational concentrators

  - **Core Indicator 2**: Completion
    Numerator = vocational completers
    Denominator = vocational concentrators

  - **Core Indicator 3**: Placement
    Numerator = vocational completers who are positively placed
    Denominator = vocational completers

  - **Core Indicator 4**: Nontraditional for Participation
    Numerator = vocational participants enrolled in coursework identified as nontraditional for their sex
    Denominator = all vocational participants enrolled in coursework identified as nontraditional for either sex
    Nontraditional for Completion
    Numerator = vocational completers finishing coursework identified as nontraditional by their sex
    Denominator = all vocational completers finishing coursework identified as nontraditional for either sex

- **Occupational Skill Attainment**–identifies definitional issues that affect performance outcomes. All states are required to report accountability data for each of the core indicators defined in Perkins III. These indicators are comparable across the states, but each state defines outcomes, specifies measures, and collects data in different ways.
  Issues that the study identified that account for the variability of reporting in **secondary programs** include the following:
  - Measurement tools:
    - Is the exam or coursework required for graduation or course completion?
    - Is the exam or coursework fully implemented and long-standing, or relatively new?
    - What is the validity and reliability of the assessment system?
  - Scope of skill assessment:
    - Which academic subjects are included in the measure? All core academic courses – language, arts, mathematics, social studies, and science – or a subset of courses?
    - Are vocational-technical skills broad (e.g., SCANS) or focused on specific outcomes?
    - Are standards and assessments state-established or national?
  - Student population:
    - Are all vocational concentrators included or is measurement confined to a grade cohort or group of students participating in a subset of vocational programs?
    - Are special populations (e.g., IEP or LEP) included in the measure?
  - Timing of measurement:
    - Is the assessment administered prior to or early in students' vocational program, or after or concurrent with participation?

Definitional issues relating to skill attainment identified by the **postsecondary institutions** participating in the study include:

  - Measurement tools for postsecondary tools:
    - Are assessment instruments aligned to program or course learning outcomes?
    - Should there be a minimum GPA level or minimum number of credit hours that signifies skill attainment?
    - What is the validity and reliability of the assessment system?
  - Scope of skill assessment:
    - Which subjects should be included in the measure of academic attainment? Academic courses or integrated academic and vocational courses?
    - Do assessments emphasize general workplace skills or specific occupational skills?
    - What is the extent of program coverage for state-recognized licensure and industry examinations?
  - Student population:
    - Are states using student enrollments or credit hours as the unit of analysis?
  - Timing of measurement:
    - Is the assessment administered before or early in students' vocational program, or after or concurrent with participation?

- **Completion** – States use relatively similar strategies reporting student attainment either through receiving a diploma or its recognized equivalent. Performance differences at the **secondary level** are primarily due to the populations of students used in the calculations. Those differences include:
  - Do states report on all vocational program concentrators, regardless of grade level, or is analysis confined to a student cohort (e.g., 12th grade students)?

- Are GED students and dropouts included in the calculations?

States are using relatively similar methods of assessing student attainment of **postsecondary** degrees, certificates, or credentials. The inconsistencies in reporting are due to differences in the way states define completion of a postsecondary program. Eligible completers may include students who:

- Earn a degree, certificate, or credential.
- Are eligible to receive a degree, certificate, or credential.
- Earn a state-approved license or certification.
- Transfer to a four-year college or university.
- Enlist in the military.
- Complete a minimum number of credits with a minimum GPA.

- **Placement** at the secondary level and placement and retention at the postsecondary level are indicated by further education, employment, or military service. Approaches used by **both levels** to assess student outcomes included:
  - Administrative record exchange – using electronic data systems, students are tracked as they transition into further education, employment, or the military. Data are obtained by matching student records with databases maintained by other federal and state agencies.
  - State-developed and school administered surveys to track students use the following criteria to calculate placement at the secondary level and placement and retention at the postsecondary level.
    - Timing of measurement for both secondary and postsecondary:
      - What is a reasonable time period within which placement should be measures (e.g., 3 months after graduation, 6 months, or 1 year?)
    - Additional criteria for the postsecondary level:
      - What is a reasonable time period for retention?
      - Should retention reflect continuous employment within a single job or continuous employment regardless of one's job?
    - Relation to vocational education:
      - Should measurement focus on training-related placements or focus on any placement?
    - Type of placement:
      - Do measures distinguish between part-time and full-time workers/students?

## Implications for New Designs for Career and Technical Education

Based on the findings of the project, the following recommendations to develop the Core Indicator Framework for both **secondary and postsecondary programs** include:

- Build consensus around a consistent set of definitions for key student populations.
- Reach agreement on the student populations used for calculating performance rates.
- Improve the collection of placement information.
- Identify factors that can affect data quality.
- Develop a strategy for communicating state data to Congress.

Additional recommendations specific to **postsecondary institutions** include:

- Specify preferred populations for each measure.
- Clarify the effect of administrative record systems on state reporting.

## *New Designs for Career and Technical Education*
## *Book Summary No. 95*

## What Business Wants from Higher Education*

### Major Premise

The speed of change has become a defining characteristic of the knowledge age. Business needs higher education to prepare students for their future careers in a constantly changing workplace. But the learning experience will need to change to prepare students for the ambiguous, constantly evolving workplace of tomorrow.

### Major Themes

We must align education with the needs of business because:

- Higher education is of critical importance to business. It provides society with educated employees, consumers, and citizens. The quality of education will be the competitive differentiator of businesses and nations (p. 27).
- Business is changing and what it needs from employees will shift. Therefore, graduates need to be prepared to enter the workplace ready for work and able to adapt to the future. Leaders need to be developed who can anticipate and lead change (p. 92).
- University administrators and faculty members do not understand the requirements of the private sector and the need for students to be better prepared for the demands of a changing global economy (p. *x*).
- Globalization represents a structural change in learning context, process, and organization. When a structural change occurs, things never go back to the way they were. We must integrate globalization into the curriculum in a meaningful way, so that we can capitalize on it (p. 61).
- The operative definition of "quality" in business and industry is "fitness for use." Transposing this definition on higher education, quality in our educational system means that when students graduate, they will be prepared for the world of work and a balanced life (p. 125).

*Oblinger, D., & Verville, A. (1998). *What business wants from higher education.* Phoenix: The Oryx Press.

This Summary prepared by Katherine Zmetana, Ed. D. for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

This design review was prepared as part of the project, New Designs for Career and Technical Education at the Secondary and Postsecondary Levels, which is a part of the program of work for the National Research Center for Career and Technical Education headquartered at the University of Minnesota and funded by the Office of Vocational and Adult Education in the U.S. Department of Education, PR/Award (No. V051A990006.) However, the contents do not necessarily represent the positions or policies of the Office of Vocational and Adult Education or the U. S. Department of Education, and you should not assume endorsement by the Federal Government. This project was directed at Oregon State University, a partner institution in the National Center. The Project Director is George H. Copa, Professor, School of Education, Oregon State University, Corvallis, Oregon. For more information, see the website for New Designs for Learning at Oregon State University at http://newdesigns.orst.edu. This design review is part of a larger series of reviews presented in the report: Wolff, S. J., & Copa, G. H. (2003). *New designs for career and technical education at the secondary and postsecondary levels: Compendium of design reviews of related research, policies, and exemplary practices.* Minneapolis, MN: National Research Center for Career and Technical Education, University of Minnesota. The full report is available on the above website.

- Business leaders find that recent graduates are deficient in the following areas (pp. *vi*, 22), and the weaknesses must be addressed:
  - Communication skills, both verbal and in writing
  - Capability to work in teams, within individual areas and cross-functionally
  - Flexibility and ability to accept ambiguity comfortably
  - Ability to work with people from diverse backgrounds
  - Understanding of globalizations and its implications
  - Knowledge of ethical business practices
- For business to be successful, learning must become the core value in education. We must become more focused than ever on what students need and how our institutions can best provide it, or the financial and human repercussions will be too great (p. 136).
- Higher education must enhance their efficiency, effectiveness, and accountability. All must adopt best practices, especially in business operations. Universities should stick to their core business, and contract for other services (p. 157).
- Higher education must create and sustain a professional faculty workforce that is flexible and highly productive. This means fewer full and tenured professors. Faculty will resist change, but market forces will have a stronger say (p. 156).

## Implications for Education

- To provide students with a more comprehensive introduction to the demands of the work world, students need to acquire skills that can be provided by extracurricular activities, internships, cooperative education experiences, and apprenticeships (p. 77).
- To educate students for competence and success in an interdependent world (p. 62), the following ground rules have been proposed by the American Council on Education (ACE) for internationalizing institutions (p. 64):
  - Require that all graduates demonstrate competence in at least one foreign language
  - Encourage understanding of at least one other culture
  - Increase understanding of global systems
  - Revamp curricula to reflect the need for international understanding
  - Expand study abroad and internship opportunities for all students
  - Focus on faculty development and rewards
  - Examine the organizational needs of international education
  - Build consortia to enhance capabilities
  - Cooperate with institutions in other countries
  - Work with local schools and communities
- To expand the options available to faculty and students and enhance participation, information technology offers the following advantages (p. 103):
  - Students participate at a time and place that is convenient to them
  - Participants have time to compose questions, comments, or answers before producing final copy
  - Even after input is entered, it can be studied and revised before being submitted
  - Student comments are not interrupted by others
  - Inhibiting factors, such as shyness or lack of confidence in oral skills, are minimized
  - The discussion cannot be dominated by any single individual
- Higher education must be as entrepreneurial and creative as any industry, and sell educational services (p. 157). Higher education should realize that it encompasses a number of businesses that can be disaggregated to function separately (p. 138):
  - Knowledge business
  - Customization business
  - Content business

  - Brokerage business
  - Certification business
  - Credit bank business

**Implications for New Designs**

To meet the needs of the future, a new type of learning environment will be required; one that is learning-centered and where (p. 99):

- Programs of study are more individualized, with educational planning done more by competency than by discipline or job.
- Instruction is provided in modules (not just in courses) that will allow learners to review and refresh their knowledge as well as complete traditional courses.
- Testing is embedded and continuous rather than being an explicit event.
- Instruction is multi-sensory, accommodating various learning styles.
- Learners initiate educational activities themselves.
- Faculty are actively engaged as leaders in recognizing and responding to change (p. 164).

## *New Designs for Career and Technical Education*
## *Design Review No. 96*

### Credentialing/Certification in Community Colleges*

### Definition

The American Association of Community Colleges (AACC), National Council of Occupational Education (NCOE), and the National Council of Continuing Education and Training (NCCET) held a two-day colloquium, July of 2000, to discuss the impact on community colleges of major trends in certification and credentialing.

*Certification*, associated with criterion-referenced performance assessment, references:

- Occupational programs.
- Documentation of competencies in certain areas.
- Validation of the attainment of skills.
- Assurances of ability to perform in the workplace.

*Credentialing*, associated with accumulation of certificates, references:

- Groups of certificates organized by an agency, which awards a document and/or title.
- Implication of confidence and/or trust.

New models of credentialing and certification are being explored as a result of employer concern that traditional degrees—associates, bachelors, masters, doctorates—imply competency in a broad area, but do not necessarily reflect relevant skills and abilities required in the workplace. Within the last two decades, community colleges have worked with employers through customized training, extension, and occupational programs to meet the specifics of the workplace.

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*Carter, P. (2000). *Toward new models for credentialing/certification in community colleges*. Washington, DC: Consortium for Community College Development [American Association of Community Colleges, National Council for Occupational Education, and the National Council for Continuing Education and Training].

This Design Review was prepared by Susan J. Wolff, Ed. D. for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

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## Key Issues

As community colleges address the rapidly changing needs of the workforce, the following issues were raised:

- Community colleges may need to rethink their mission and traditional organization to be more responsive by aligning curriculum with the needs of community, market forces, demographic and student changes; shortening course development time; changing course content; using technology to improve response time; and thinking of students and employers as customers.
- Regional credentialing, state policy and rules, accreditation, and licensure requirements require that community colleges strive to harmonize conflicting demands from the aforementioned agencies and employers.
- Standards and documentation processes used by community colleges will need to be revised to show measurable outcomes in necessary skill areas that are in demand by business and industry.
- New providers of skill training, both educational entities and businesses themselves, are creating increased competition for the community colleges.
- Certification and credentialing need to be seen as adding value by indicating the person is capable of performing required activities.
- Community colleges need to determine their role in establishing and adopting world-class standards for the work place, creating new funding sources to address these standards, and validating assessment of learning against those standards while continuing their mission to provide higher education opportunities to their local communities.

## Strategies for Developing a New Model for Credentialing/Certification

- Establish the nation's community colleges as a leader and catalyst in expressing, adopting, and credentialing nationally recognized, world-class workforce standards.
- Define world-class workforce outcomes of learning in programs and document student achievement.
- Establish community college infrastructures (i.e., faculty, staff, systems, financing, etc.) to support credentials to world-class standards.
- Develop a credentialing system that is *valid* (i.e., integrates global programs and includes local/regional employment statements); *reliable* (i.e., reflects market demand, meets standardized outcomes, and includes continuous review and update); *portable* (i.e., globally accepted, includes high performance skills, and is transportable over geography); *flexible* (i.e., ensures success in learning, is responsive, timely, and dynamic); and *comprehensive* (i.e., open and inclusive with clear performance indicators).

## *New Designs for Career and Technical Education*
## *Design Review No. 97*

## Regional Accreditation

### Definition

Regional accreditation in the United States is a collegial process that encourages institutional improvement and ensures institutional quality, integrity, and accountability. It occurs through continuous institutional self-assessment and periodic critical peer evaluation conducted through voluntary non-governmental associations. The focus is on evaluation of entire institutions, rather than individual programs or subject content areas. Accrediting agencies establish criteria against which institutional quality and effectiveness are evaluated.

### Key Features

Purposes of Regional Accreditation are to ensure that an institution:

- Has a clearly defined and appropriate educational mission and goals.
- Has conditions under which its mission and goals can reasonably be achieved.
- Appears to be substantially accomplishing its mission and goals.
- Is reasonably organized, staffed, and supported to continue to fulfill its mission and goals.

Principles of Evaluation:

- Proceeds from the institution's own definition of its mission and goals.
- Determines the extent to which the institution achieves its mission and goals.

Evaluation Criteria:

- Member-approved conditions and principles that characterize quality and effectiveness.
- Qualitative statements that with evidence lead to judgment by peers of institutional effectiveness.
- Holistic contextual framework rather than disparate prescriptive measures.
- Assessment, evaluation, or judgment of quality/effectiveness explicitly referenced in each standard established by the regional accreditation agencies.

This Design Review was prepared by Ronald L. Baker, Ed. D. for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

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*Noteworthy Components*

- Institutional planning consisting of:
  - Planning to achieve its mission and goals.
  - Assessment of the institution's effectiveness in achieving its mission and goals.
  - Use of assessment results for broad-based, continuous planning and evaluation.

- Educational program planning and effectiveness based on regular and continuous program assessment.

- Assessment of educational programs relative to mission and goals consisting of:
  - Continuous academic planning.
  - Implementation of academic plans.
  - Assessment of resulting outcomes.
  - Enhanced planning and effectiveness resulting from the use of assessment outcomes.

**Implications for Learning**

- Expected learning outcomes are identified and stated in relation to the institution's mission and goals.
- Learning outcomes are assessed to demonstrate that completing students achieve intended outcomes.
- Transfer associate-degree programs must include a substantial core of collegiate level General Education with identifiable outcomes and required competence in: (a) written and oral communication; (b) quantitative reasoning; (c) critical analysis and logical thinking; and (d) literacy in the discourse or technology appropriate to the program of study.
- Applied or specialized associate degrees or certificate programs of one year or more in length require a recognizable body of instruction in: (a) communication; (b) computation; and (c) human relations.
- Instructional resources are sufficient and designed, maintained, and managed to achieve institutional and educational missions and goals.

**Implications for New Designs**

- Emphasis on outcomes and achievements rather than structures and intentions.
- Necessity for clear articulation and broad understanding of institutional mission and goals.
- Significance and importance of aligning institutional initiatives and resources with mission and goals.
- Importance of clarity on intended institutional and educational program outcomes.
- Planning and evaluation are participatory involving constituencies appropriate to the institution such as board members, administrators, faculty, staff, students, and other interested parties.
- Research, evaluation, and planning are integrated to identify institutional priorities for improvement.
- Comprehensive planning for institution facilities occurs and is based upon the institution's mission and goals, addresses needs of special constituencies, and supports instructional and administrative functions.

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## *New Designs for Career and Technical Education*
## *Design Review No. 98*

### Analysis of Community College Accreditation Self-study Reports*

#### Definition

Community colleges are accredited on an institutional basis by regional associations on a ten-year cycle. Focus and interim visits address recommendations given by the association and to monitor progress being made on the recommendations. Accreditation assures students that their courses and degree programs are meeting standards that are recognized by the higher education community and provides access to federal funding for student financial aid.

#### Key Features

An analysis of selected self-study reports that were prepared in advance to an accreditation team visit and evaluation indicated the following features to be considered in designing career and technical education programs at the community college level:

- **Dynamic Plans**–Develop dynamic strategic plans/models, which are linked to college mission, vision, and goals.
- **Diverse Audience**–Need to serve audiences, often from large and very distinct geographic locations, with varying aspirations and needs.
- **Partnerships**–Build strong partnerships with K-12, other community colleges, higher education, business, industry, and community agencies to meet changing workforce needs and changing demographics.
- **Accountability**–Increase collection of data that can be used for assessment and accountability measures concerning the mission, vision, and goals of the colleges.
- **Program Review**–Create effective program review systems to ensure viability of offerings and currency with the community.
- **Adaptability**–Adapt to changes in funding and governance structures.

*Self-studies from the following rural, suburban, and urban community and technical colleges across the United States were reviewed: Ivy Technical College, Clover Park Technical College, Mesa San Diego College, Salt Lake Community College, Kirkwood Community College, College of the Siskiyous, Lane Community College, Western Wisconsin Technical College, Dakota County Technical College, Vermont Technical College, Middlesex County College, and Queensboro Community College.
This Analysis was prepared by Brenda Inglis for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

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- **Marketing Plan**–Create an aggressive marketing plan to respond to an ever-increasing competitive environment.
- **Staff Development**–Focus on faculty and staff development, including mentoring, support for professional improvement, and recognition of contributions.
- **Diversity**–Encourage and support diversity in the workforce and student population.
- **College Foundations**–Build and strengthen college foundations to assist with the financial and public relations areas of the college.
- **Facilities Renovation**–Seek funding for physical plant renovations or new construction and for replacement of or acquisition of new instructional equipment.
- **Consistent Quality**–Provide quality products and services in a consistent manner to all constituents.

**Impact on Learning**

- Providing quality courses and programs for and meeting the needs of a diverse audience.
- Providing courses and programs that are current with community needs.
- Including opportunities for learning in work-based or community-based programs.

**Implications for New Designs**

- Develop and update strategic plans related to mission, vision, and goals of the college.
- Serve diverse learner populations.
- Partner with other agencies and institutions to provide learning that meets the needs of the student, community, and workplace.
- Implement strategies for collecting usable data to drive programming and evaluation.
- Review offerings and programs on a continual basis to determine viability and currency.
- Adapt governance structures to increase effectiveness of institution.
- Develop and promote programs in ways that attract students, partners, funding, and political support.
- Develop staff for new roles of mentoring and being partners with others to provide quality learning and service.
- Develop multiple funding streams including that of the college foundation.
- Maintain and build facilities that support needed learning experiences.

**Learning Accountability**

Moskal, B.M. (2000). *Scoring rubrics part I: What and when* (Report No. EDO-TM-00-01). College Park, MD: ERIC Clearinghouse on Assessment and Evaluation. (ERIC Document Reproduction Service No. 446110)

Scoring rubrics, or descriptive scoring schemes, have become a common method for evaluating student learning in both K-12 and college classrooms. Teachers, faculty, and other evaluators develop and use rubrics to support other evaluation methods when a judgment of quality is required and to provide feedback to students regarding their performance. Rubrics may be used to evaluate specific tasks or a broad range of subjects and activities.

Moskal, B.M. (2000). *Scoring rubrics part II: How?* (Report No. EDO-TM-00-02). College Park, MD: ERIC Clearinghouse on Assessment and Evaluation. (ERIC Document Reproduction Service No. 446111)

The development of scoring rubrics requires clearly identifying desired qualities in the learners' work that demonstrate proficient performance. If an analytic assessment is needed, then each criterion is considered separately as the descriptions of the different score levels are developed. A holistic assessment identifies the collection of criteria throughout the construction of each level of the rubric, resulting in a single descriptive scoring scheme.

# Design Reviews for the Learning Celebration

# *New Designs for Career and Technical Education*
## *Design Review No. 99*

## Learning Celebration

### Definition

A celebration is a form of recognition and validation of human experience, typically associated with joy and festivity, and performed in religious, cultural, societal, and professional communities. Celebrations are used to mark events, passages, and special occasions (such as weddings, births, religious feasts, the inauguration of a building, or the founding of a nation) that are known to a particular community. Generally a celebration is a public event, attended by all members of the community, but may also be a personal observance or ritual.

*Learning celebrations* mark important moments in the learning life of an individual or learning community. Common examples of these are graduation, initiation, completion of tests or exams, and awarding of credentials. Individuals or groups may also be singled out for particular awards of accomplishment, merit, or experience.

Note: *Celebration* is also being used today as a broader term, denoting *recognition*, as in Celebration of Diversity, and so on.

### Key Features

Celebration occurs among all of humanity and is observed in virtually every culture and society. Commonly celebrations mark beginnings and endings, the passage of time, or the transition from one state to another. The most important aspect of celebration is the *witnessing* of the occasion. Most celebrations are performed where the community can bear witness and may include several of the following characteristics:

- Observance of the occasion with appropriate ceremony, involving costumes or special clothing, decorations, preparation and serving of particular foods, communal feasting, dancing, rejoicing, and songs or words of praise and honor.

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- Public acknowledgment, with words or speeches making the event widely known and entered into history. Another aspect of this is remembrance of others who have witnessed the occasion before, or its inception, and assurance that the event will be remembered and celebrated in the future. Celebration creates an occasion for reflection and thinking back.

- The following of ritual, or specific, repetitive actions and words that denote reverence and respect. Rituals arise from tradition, religion, and history, and help to create a sense of coherence and continuity.

- Awards, prizes, gifts, or offerings in recognition of the occasion or accomplishment. These afford the occasion for remembrance and continuity.

- Intense expressions of emotion. Celebrations allow an opportunity for emotional release and provide a venue for social inclusion, friendship, and solidarity.

### Impact on Learning

Research indicates that all humans have a need for celebration and, most important, a sense of belonging, or community. Celebration helps to build community and serves to recognize its members as part of that community. Therefore, celebration is an integral part of learning that builds and preserves the learning community. It allows for creative acts and contributions (Copa & Ammentorp, p. 269).

Faculty, students, and administrators need and want celebration and ritual to mark important transitions, events, and accomplishments. At the same time, celebration can be a way of motivating and encouraging the best in people, allowing creativity, contribution, and inclusion. According to Copa and Ammentorp (1998) learners will derive their own meaning from the celebrations in which they take part (p. 262).

### Implications for New Designs

- Celebrations provide a way of honoring, supporting, and including all members of the learning community.
- Learning celebrations need to recognize individual as well as group achievement.
- Learning celebrations need to value differences in culture, experience, and personal beliefs and reflect the diversity of the institution's community.
- Celebrations must be authentic and purposeful for the institution and for those who will be celebrating and should allow for creative acts and contributions (Copa & Ammentorp, p. 268).
- Standards and expectations for "traditional" awards must reflect the goals of the community and be stated upfront and made public. These standards also serve to allow members to gauge their own efforts (Lashway, p. 1).
- Celebrations can be spontaneous, allowing for the element of surprise and providing a forum for expression of emotion.
- The learning signature should be visible and present, connecting the significance of the occasion to the community that is celebrating.
- Staffing and staff development should include celebrations as well as prepare faculty to recognize opportunities for celebration in the classroom.
- Celebrations should provide opportunities for developing and preserving learning partnerships with the outside community, fostering cooperation and collaboration.

## mplications for New Designs for Career and Technical Education

- Celebration should not center only on graduation and the completion of a program; it should mark any event that is commemorable. For example, students who do not graduate should be celebrated for the level they do attain and the learning and attempts that have been made.
- Celebration should adopt rituals and traditions that are particular and relevant to the career and technical education context (e.g., instead of caps and gowns, award first set of uniforms; or each component of uniform that marks a new stage in learning and accomplishment).
- Celebrations should allow for contact and networking with the larger, professional community.

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# Design Reviews for the Learning Finance

## *New Designs for Career and Technical Education*
## *Design Review No. 100*

### Financing Vocational Education*

### Definition

Vocational education at the secondary level across the country is funded using different mechanisms. Vocational education is often labeled as being more expensive than other forms of instruction, but there is lack of evidence or documentation of this due to the various funding strategies being employed. MPR Associates conducted a national survey to help state legislators compare vocational education funding levels and formulas for distributing resources. The survey included an Internet search on state legislation, administrative codes, and state guidelines governing vocational funding and interviewed state finance experts. The report summarizes the findings of the survey.

Funding strategies include:

- State foundation grant programs–Intended to ensure all students in the state receive a minimum level of basic education services.
- Unit-cost-based mechanisms–Allocated based on the number of courses offered, teachers engaged in vocational instruction, weighted, per-pupil formulas, or cost reimbursement.
- Performance based funding–Allocated based on achievement of student outcomes
- No supplemental funding for vocational instruction–Smaller, more rural states often do not provide additional funding for vocational instruction

### Key Findings of the MPR Report

The three components of the report are (1) the cost of vocational education, (2) state approaches to funding vocational education, and (3) reflections on state funding practices for vocational education.

1. Cost of vocational education:
   - Relative cost of hiring academic and vocational instructors is about the same.

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*Klein, S. (2001). *Financing vocational education: A state policymaker's guide*. Berkeley, CA: MPR Associates in collaboration with National Association of State Directors of Vocational Technical Education Consortium and National Conference of State Legislators.

This Design Review was prepared by Susan J. Wolff, Ed. D. for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

This design review was prepared as part of the project, New Designs for Career and Technical Education at the Secondary and Postsecondary Levels, which is a part of the program of work for the National Research Center for Career and Technical Education headquartered at the University of Minnesota and funded by the Office of Vocational and Adult Education in the U.S. Department of Education, PR/Award (No. V051A990006.) However, the contents do not necessarily represent the positions or policies of the Office of Vocational and Adult Education or the U. S. Department of Education, and you should not assume endorsement by the Federal Government. This project was directed at Oregon State University, a partner institution in the National Center. The Project Director is George H. Copa, Professor, School of Education, Oregon State University, Corvallis, Oregon. For more information, see the website for New Designs for Learning at Oregon State University at http://newdesigns.orst.edu. This design review is part of a larger series of reviews presented in the report: Wolff, S. J., & Copa, G. H. (2003). *New designs for career and technical education at the secondary and postsecondary levels: Compendium of design reviews of related research, policies, and exemplary practices.* Minneapolis, MN: National Research Center for Career and Technical Education, University of Minnesota. The full report is available on the above website.

- Number of instructors to staff classrooms and laboratories is often smaller than academic courses due to smaller class sizes expensive equipment, and safety precautions.
- Materials and equipment needed are variable and difficult to quantify.
- Development and maintenance of specialized instructional areas affect total costs of vocational education.
- State demographics and local, state, and regional economic conditions, including demand for skilled labor and price of materials, affect the cost, organization, and delivery.

2. State approaches to funding vocational education:
   - Vocational staff cited inheriting historical funding formulas and the importance of maintaining stability in annual allocations and reluctance to change what appears to be working.
   - Adoption of new funding strategies that may include funding based on student participation in specific vocational programs related to high labor market demand or number of students who complete programs and enter the workforce.

3. Reasoning for differences in funding vocational education:
   - Local choice reflecting student, parental, or community preferences for vocational education or academic education.
   - Demographic and geographic variation within districts in distribution of K-12 students.
   - Perceived need for students seeking direct access to careers without further education.
   - Statistics showing 90% of all high school students aspiring to postsecondary education with 30% actually continuing their education.

Overall purpose and operation of vocational education at the secondary level is similar across the country but is funded differently from state to state. Recommendations for changes in vocational funding include:

- Clarify reasonable level of spending for vocational education.
- Develop set of annual district reporting procedures to track expenditures for vocational programs, services, and other activities.
- Compute expenditures for purchasing and maintaining equipment and supplies.
- Assess return on investment by collecting and analyzing data that quantifies the costs and benefits of vocational education.

**Implications for New Designs for Career and Technical Education**

- Identify learning finance strategies to seek, allocate, manage, and sustain available funding for CTE courses, programs, and staff.
- Build partnerships with other learning providers and businesses to share cost/benefit responsibilities for CTE courses, programs, instructional equipment and supplies, and staff that support learners and communities.
- Create systems for collecting, analyzing, and reporting useful data for seeking new or sustaining existing funds for CTE courses, programs, equipment and supplies, and staff.

## *Designs for Career and Technical Education*
## *Design Review No. 101*

### National Assessment of Vocational Education*

**Definition**

The Carl Perkins Vocational and Technology Education Act (Perkins III) directed the Secretary of Education to complete an independent evaluation and assessment of vocational and technical education programs included in the Act. The National Assessment of Vocational Education (NAVE) will conduct this evaluation and assessment. The evaluation and assessment will guide the reauthorization of the Perkins Act in 2003.

Sweeping changes in state and local education, new goals and program offerings, and new terminology are creating a new vision for vocational and technical education. Several of the initiatives in the legislation to be addressed are new, resulting in a report with preliminary results and indicating further research. Two key factors guiding the NAVE agenda are (a) current policy environment and (b) specific research questions that reflect policymaker and practitioner interests.

Perkins III and other federal legislation related to vocational education are moving from (a) preparing students for entry-level jobs in semi-skilled occupations to one of preparing students for high-wage, high-skill occupations; (b) preparing students to enter the workforce directly from high school to providing students with the choice of pursuing employment or attending college or doing both simultaneously, which is becoming more the standard; and (c) expecting vocational students to do less well in school that other students, to holding such students to the same academic standards as others.

**Key Features of the NAVE Assessment**

The topics that will be addressed in the report include:

- Implementation of state and local programs
- Impact of changes in federal funding formulas

*Goodwin, D. *National assessment of vocational education: An overview of evaluation plan*. Washington, DC: U.S. Department of Education, National Assessment of Vocational Education. www.ed.gov/offices/OUS/PES/NAVE/evalplan//overview.html .

This Design Review was prepared by Susan J. Wolff, Ed. D. for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

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- Teacher quality and teacher supply and demand
- Student participation in vocational education
- Academic and employment outcomes
- Employer involvement and satisfaction with vocation education programs
- Education technology and distance learning
- Impact of accountability requirements on program performance

**Key Policy Concerns Shaping the Assessment**

- Federal funding for vocational education–From FY 1980 to FY 1999, overall funding for educational programs increased by 177% and vocational funding increased by 47%. (See Graph 1). In FY 1980, the percentage of federal funds appropriated for vocational programs was approximately six percent and by FY 1999 the percentage had shrunk to approximately three percent. (See Graph 2). Further analysis of the funding appropriations for vocational programs adjusted by inflation is shown in Graph 3.

- Academic reform–Recent educational reforms, including those of federal legislation, are focused on improving students' academic achievement and increasing their opportunities to attend college. The report will address what role vocational education plays in contributing to meeting these objectives.

- Changes in Perkins III–The substantive changes of the new legislation include (a) increased emphasis on academics, (b) greater flexibility in the use of funds through elimination of major set-asides for gender equity and other rules for use of funds, (c) higher proportion of funds directed to local programs and the establishment of a 10% reserve fund; and (d) creation of a "higher stakes" accountability system. Concurrent to Perkins III, the Workforce Investment Act (WIA) has also been charged with encouraging greater integration of vocational education and workforce development systems.

**Impact on Learning at both the Secondary and Postsecondary Levels**

Vocational and technical education is offered at both secondary and postsecondary levels, however Perkins III was written to address primarily the secondary level. According to Goodwin, research shows there are significant differences between students in high school and in college with respect as to the reasons they enroll in vocational courses and programs. Several studies have been commissioned by NAVE to obtain data for writing the report on Perkins III that is due to Congress in 2002.

For secondary vocational education, the primary focus areas of the studies will be (a) participation and outcomes, (b) quality of secondary school vocational education, and (c) effectiveness of promising vocational education strategies. The focus areas at the postsecondary level will include (a) participation and outcomes and (b) postsecondary occupational education and its alignment with WIA.

- Secondary Vocational Education:
  - **Participation and outcomes**–Prior to the early 1990s, vocational education was seen as the high school track for those students with poor academic abilities, special needs, or behavioral problems and the vocational programs contributed little value to student outcomes. Over the last five to seven years, new initiatives are targeting a broader segment of students and states and districts are working to strengthen vocational courses. The newer priorities for vocational education include academic achievement

and postsecondary enrollment in addition to technical competency, labor market alignment, and employability skills.

- **Quality of secondary school vocational education**–The move to strengthen vocational and career education is linked to strategies for vocational education to play a key role in meeting objectives of the legislation and to other overall education reform efforts focusing on improvement of academic achievement. The preparation of vocational teachers and training to redesign curriculum and implement new learning processes and assessment that point to improvement of learning in measurable terms will be a focus of the studies.
- **Effectiveness of promising vocational education strategies**–Schools can no longer rely on the limited information provided by Tech-Prep, career academies, career clusters, and High Schools that Work as a means to show improvement in student performance. Implementation of these strategies has been uneven and there have been no large-scale or longitudinal studies on whole school reform conducted. Determination of key elements to achieve outcomes will be necessary (e.g., innovative instructional techniques, changes in administrative structures, or raising core requirements) to provide critical evidence of improvement.

- Postsecondary Occupational Education:
  - **Participation and outcomes**–In contrast to secondary vocational enrollment, occupational enrollment at the postsecondary level continues to grow at a rate in keeping with the sub-baccalaureate level. There has also been a shift to enrollment of older students pursing nontraditional paths to career development and advancement. Of particular importance to the NAVE report will be the impact of economic benefits of postsecondary occupational education for communities as well as for students.
  - **Postsecondary occupational education and its alignment with WIA**–Perkins III legislation included coordination of workforce development programs to reduce administrative overhead and increase access to services. Of particular interest to NAVE is that in spite of increased enrollment in occupational programs at the postsecondary level, degree completion rates are low indicating further studies to understand the needs of the students seeking career training at the postsecondary level.

## Implications for New Designs for Career and Technical Education

- Identify learning processes that are most effective for improving academic performance of CTE learners.
- Create a learning system that brings CTE and academic learning goals into alignment with one another to improve academic performance and prepare learners for careers and further education.
- Determine pathways for sub-baccalaureate students to prepare for careers and further education.
- Partner with other workforce development providers to better prepare learners for high-wage, high-skill careers.

## *New Designs for Career and Technical Education*
## *Design Review No. 102*

### Privatization of Public Education

#### Definition

Privatization is the act of reducing the role of government, or increasing the role of the private sector, with production and finance as the distinguishing characteristics (DeAngelo & Cohen, 2000). The notion of privatizing public education institutions arose when long-term, stable financing of education through local, state, and federal dollars became increasingly uncertain. Privatization calls for substantially trimming the scope and breadth of government services, replacing them with private or other non-governmental operators (Rehfuss, 1995). According to Rehfuss, two strategies employed in privatization include complete withdrawal of public services and contracting out services to private parties, community groups, non-profit organizations, or even former employees to provide public services. The desired result of privatization is reduced cost and increased management flexibility.

Contracting for auxiliary and support services is usually the first action toward privatization. Private sector enterprises may provide all or partial services in the core areas of management, instruction, and curriculum (e.g., Sylvan Learning Systems providing remedial education for disadvantaged students in five Baltimore elementary schools or Berlitz International, Inc. providing Spanish-as-a-second language for Florida elementary schools). Public-private partnerships harness competitive efficiencies to the benefit of learners.

#### Models of Privatization

- Public production with public finance (traditional model, though decreasing in extent)
- Public production with private finance (increasing support coming from private fundraising)
- Private production with public finance (deregulation)
- Private production with private finance (load shedding and divesture when government stops providing a service and leaves it up to what market will bear)

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### Forces Behind Privatization

- Fiscal constraints, political climate, and declining confidence in education system for not answering to performance measures are driving the push toward privatization.
- State appropriations for education have steadily declined, even in times of a robust economy and state surpluses.
- Postsecondary education is increasingly seen as a private gain rather than a public good or service.
- Public institutions are seeking to lessen governmental regulations and requirements on tuition or fee rates, purchasing requirements, and governance.
- Public institutions are showing a desire to replicate private or proprietary education to become more autonomous, entrepreneurial, able to invest in venture funds and activities, and to seek higher aid for students.

### Forces Against Privatization

- Private fundraising can never replace the massive amount of dollars appropriated by state and federal government.
- Private resources often have specific priorities attached.
- Privatization compromises the historic role and mission of public education in the country.

### Implications for Education

- Strong leadership and vision are needed to seek privatization and to negotiate with state legislators.
- Overhead expenses for fundraising do not directly contribute to the educational mission.
- High tuition and high aid could reduce access to education, especially for minorities and first-generation students and could also increase student debt loads
- Economic recessions could affect fundraising, making sustainability of funding and programs questionable.

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DeAngelo, L. & Cohen, A. (2000). *Privatization: The challenge ahead for public higher education*. Eugene, OR: ERIC Clearinghouse on Educational Management. ED: 443 310.

Rehfuss, J. (1995). *Privatization in education*. Eugene, OR: ERIC Clearinghouse on Educational Management and National Association of Elementary School Principals, Alexandria,VA. ED 406 741.

## *New Designs for Career and Technical Education*
## *Book Summary No. 103*

### The Age of Access*

**Major Premise**

Capitalism is transforming and spreading globally, affecting the nature of business and, ultimately, society. The focus is no longer on accumulating products, but on buying *access* to products and their related intangible commodities. This movement can be credited to the advent of the personal computer and is as transformational to human consciousness and societal evolution as was the invention of the printing press.

**Major Themes**

- Hypercapitalism–We pay for the experience of using things—in the form of subscriptions, leases, admission fees, memberships, and retainers—rather than for the things themselves. The capitalist economy is founded on exchanging property in markets and uses the language of *buyers* and *sellers*. The language of market transactions in the new economy has switched to *suppliers* and *users*.

- Access–Commodities are not owned; rather, access to them is leased as a service. Access is not just the notion of access to technology, but to the broader notion of access. Current examples include:
    -Home mortgages, car and computer leases, equipment and tool rental
    -Memberships to exclusive clubs, living communities, restaurants
    -Subscriptions to diaper service, food and meal delivery, home and garden care

  Access means inclusion in the commercial sphere, and brings to the holders economical, social, and political power.

- Commodification–Anything and everything becomes a deliverable commodity. Intangible commodities can be marketed in different ways:
    -Vacation resort holidays, time shares, cultural experiences, computer story games

*Rifkin, J. (2000). *The age of access: The new culture of hypercapitalism where all of life is a paid-for experience.* New York: Jeremy P. Tarcher/Putnam.

This summary was prepared by Katherine Zmetana, Ed. D. for New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.

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-Personal information—family and work status, cultural background, likes, dislikes, spending trends—providing royalties to the provider and to the individual
-Products that are given away to ensure ongoing contractual relations for services (for example, free cell phone, satellite dish, or internet set-up)
-Time, which is what people lack, is the most valuable commodity
-*Lifetime Value (LTV)* of the customer is the theoretical measure of how much the customer is worth in terms of long-term commitment to a service provider (p. 7)
Commodification gives rise to the birth of the experience, or cultural, industry

- Social Dynamics–Networking, teamwork, and relationship building are the vital keys to the new economy. The average individual will meet thousands of people in a lifetime, but these relationships will be of a different nature.
  -Survival in the new economy depends on being connected—literally and figuratively.
  -Connectivity is dividing humanity into two different spheres of existence—those who have access to it, and those who never will (p. 230).
  -Access will be defined by connection vs. disconnection, inclusion vs. exclusion.
  -Focus is on *R-technologies* (relationship) rather than *I-technologies* (information) (p. 100).

- Characteristics of the New Generation–Today's youth has grown up with computers, television, and material goods, in a world of Sesame Street, Much Music, and video games. The result is that they differ from their parents in the way they interpret the world:
  -More comfortable reading information on a screen than in a book
  -Live in seven-second sound bites; think in terms of images more than words
  -Less analytical, more emotive; less interested in history, but obsessed with style and fashion
  -Think of themselves as players rather than workers, creative rather than industrious
  -More systemic and participatory than linear and objective: process is more important than structure and function
  -Less competitive, more oriented to consensus thinking and teambuilding / interconnectedness of people (p. 212)
  -Parallel processing and multitasking (p. 212)
  -Flexible and able to adjust to changing environments, therefore more chameleon-like and multi-persona
  -More caught up in time than in geographical space (p. 208)
  -Tend to live for the moment, for self

Fallout–Previously, strong community was the prerequisite for a healthy economy because it produced culture and culture built social trust. Intimate social relations require real time contact and face-to-face engagement. *Communications* and *community* stem from the same root word (p. 139). Today, human affairs are now structured quite differently and commercial bonds, not social bonds, are those left to hold society together. A generation that is more connected to disembodied relationships is unable to feel for one another (empathy) and is incapable of creating the social trust that is so essential to maintaining culture (p. 246).

**Implications of the New Economy for Business**

Today service industries make up 77 percent of the US economy; by 2010, it will be 90 percent. The focus in business will be on controlling the customers; companies will serve mainly as agents. Workers will be leased out on temporary assignments for just-in-time employment or will be hired as independent contractors. Business practices should strive to:

- Develop business plans from the customer end backward, rather than from the production end forward (p. 106).
- Produce goods and services just-in-time to specifications of individual customers.
- Ensure products are conveniently and quickly upgradeable.
- Market products to create identity bonding with a business or lifestyle, realizing that companies make memories, not goods.
- Create new kinds of communities that bring like-minded people together because of a common interest (p. 108).
- Build networks to permit and maintain access to customers, cultivating long-term commercial relationships.

## Implications for New Designs

To prepare youth and adults for a future as described by Rifkin, we must keep the following concepts in mind:

- Temporality of Employment–Learners need to find a niche in an area of interest and prepare for a variety of opportunities. They will need to constantly upgrade their skills and knowledge and adapt themselves to provide a variety of services in their specialization. They must know how to schedule and organize their workday and life, and be able to market themselves. They will likely work out of their home. They will need to be savvy in investment and prepare for retirement.
- Lifelong Learning–The pace of life is speeding up. Many products are outdated as they come off the production line. Much of education is outdated by the time the learner completes a program or graduates. Individuals will need continual enhancement of skills, personal and professional development, and counseling.
- Post-Modern Learning Institutions–Colleges will be a meeting place of like-minded people for social contact and interaction. They will serve as intermediary agents to provide a range of personalized services that ensure lifelong learning opportunities for their learners. Institutions and learners will see each other in terms of LTV. Colleges will need to heed the advice given to business (previous page).
- Societal Implications–As agents, learning institutions will need to provide a continuum of services that meet personal, workplace, social, and civic needs. Learners must:
  - -Be computer literate and capable of negotiating their way through cyberspace (p. 265).
  - -Learn in an environment that fosters relationships and networks, teamwork, co-partnering, and communicating.
  - -Relate school learning to real life, civic responsibility, and social realities.
  - -Develop empathy and understanding of diverse lifestyles and cultures, and of how cultural values hold societies together.
  - -Adjust to changing environments, and address the multiplicity of opportunities that present themselves.

**Learning Finance**

Clearinghouse on Educational Finance (no date). *Improving efficiency and cost-effectiveness.* Eugene, OR: College of Education, University of Oregon.

Concerns about equitable and adequate distribution of educational opportunities are matched equally by concerns of productivity and efficiency in public schools. Current and future challenges are to provide a significantly higher rate of student achievement with declining resources (Oden and Clune, 1995). School achievement is more difficult to aggregate than the production of goods in a private business. Schools serve learners with various cognitive, emotional, and social developments. One strategy to measure school achievement is based upon potential or real earnings capabilities. The earnings also reflect in community and economic development benefits. In 1998, Hadderman pointed out the following three areas of agreement: (1) available resources are shrinking even in times of economic prosperity, (2) research is needed to determine how school funds are actually spent, and (3) schools will need to discover more cost-effective ways to use existing resources. Districts with clear visions and plans for education reform usually succeed in gaining new dollars.

ERIC Digest. (1984). *Methods of securing alternative funding for community colleges* (Clearinghouse No. JC870421). Los Angeles, CA: ERIC Clearinghouse for Junior Colleges. (ERIC Document Reproduction Service No. ED286552)

During the 1950s through the 1970s, community colleges experienced rapid growth and adequate funding. Public funding is now decreasing and alternative methods for funding operations and projects are becoming necessary. Five approaches to alternative funding include: (1) grant development, (2) revenue diversification, (3) solicitation of corporate donations, (4) alumni associations, and (5) college foundations.

Grubb, W.N., Badway, N., Bell, D., Bragg, D.D., & Russman, M. (2000). *Workforce, economic, and community development; The changing landscape of the entrepreneurial community college.* Berkeley, CA: University of California at Berkeley.

Three areas or entrepreneurship for community colleges are workforce development, economic development, and community development. These areas can create an "entrepreneurial" dimension to the college because the resulting funds and activities are not always tied to basic college funding sources such as state allocations. Workforce development programs provide training for prospective and current employees of business and industry. Community college economic development programs, in partnership with local agencies, attract, stabilize, or increase employment in the community. Community development offerings increase the wellbeing of communities in political, social, and cultural areas. Programs in these three areas are more successful through proactive strategies rather than reliance on requests for services. Workforce development, economic development, and community development programs bring recognition to the college and can provide for more discretionary revenue.

Hadderman, M. (1999). *School-based budgeting* (Report No. EDO-EA-99-7). Eugene, OR: Clearinghouse on Educational Management. (ERIC Document Reproduction Service No. ED434401)

School-based budgeting facilitates school-based management and provides incentives for innovation and accountability. Research shows that decentralizing power, information, knowledge, and rewards increases organizational effectiveness and productivity. Implementation, decision-making, procedural, and legal strategies need to be developed to assure due process, protection of civil rights, and fairness. Research suggests that school-based budgeting is a significant strategy in a larger redesign needed to impact student achievement.

Leslie, L.L. (1988). *Enhancing a college's fund-raising ability* (Report No. EDO-HE-88-13). Washington, DC: ERIC Clearinghouse on Higher Education. (ERIC Document Reproduction Service No. ED308799)

Fundraising for educational institutions, primarily at the postsecondary level, is more successful when based upon an institution's visibility and success rather than approached from a "poverty strategy." Alumni tend to respond better to the "need" approach, but large donors want to develop long-standing ties to leading institutions. Athletics are often at the center of a debate about whether they attract resources to the institution or drain resources from other programs. Research shows that successful athletic programs do provide an increase in resources that often spills over into non-athletic benefits.

Schuyler, G. (1997). *Fundraising in community college foundations* (Report No. EDO-JC-97-05). Los Angeles, CA: ERIC Clearinghouse for Community Colleges. (ERIC Document Reproduction Service No. ED405943)

Community colleges were created and continue to be supported by local and state funding. As these appropriations have decreased, colleges have focused on creating institutional foundations or enhancing their efforts to seek contributions to the foundation. The purpose of the college foundation is to solicit private monies and invest them for the benefit of the college. The foundation is a separate legal entity from the college. Earlier solicitations were marked for capital campaigns, but current strategies are focusing more on "friend raising" to involve community leaders in college activities to enhance college image and visibility. Fund-raising strategies include annual fund drives, planned and deferred giving, capital campaigns, special events, business partnerships, and grant acquisition.

## Relation of Design Reviews to Design Recommendations

The relationship between the design reviews and the project's design recommendations is described in following section of this report. Tables 1 - 13 show the design reviews (by Identification Number) that relate to each of the recommended features for the design elements of career and technical education addressed by the project. The process used for determining the relation of the design reviews to the design recommendations was based on the following criteria: (a) initial placement of design review within the specific design element, which contains the recommended design features; (b) further analysis to determine if the design review might relate to one or more other design elements and their recommended design features; (c) direct reference in design review to key concepts contained in the recommended design features; and (d) extensive indirect reference in design review to key concepts and practice contained in the recommended design feature. The design recommendations are presented with additional information in the *Design Guide for Practice and Policy.*

## Table 1.
## Recommended Design Features of Learning Context of Whole School/College Relating to Career and Technical Education

| **Recommended Design Features** | Related Reviews |
|---|---|
| **Be up-to-date and vibrant** - Requires the learning experience be current and dynamic, encourage innovation, and unleash all human potential in response to an ever-changing context. | 2, 3, 7 12, 22 23, 24 31, 37 |
| **Build shared vision of quality** - Requires development of clearer and more focused direction and commitment to high quality that is deeply shared by stakeholders. | 4, 5, 6 10, 19 27, 86 |
| **Search for coherent synergy and connectedness** - Requires more and newer forms of coherent partnerships, alliances, compacts, and collaborations with families, business and industry, labor, education, and community-based organizations. | 6, 9, 11 12, 17 18, 86 |
| **Be portable for the learner** - Requires that what is learned be transportable and recognized (credited) in other learning environments. | 11, 12 37, 42 |
| **Enhance public perception and credibility** - Requires creating and maintaining a more positive public image of education. | 4, 5, 12 19 |
| **Insure usefulness of learning** - Requires attention to the application of learning to the challenges and opportunities of all life places (e.g., personal, work, community, and family). | 2, 12, 13 19, 22, 23, 24 36, 39 66, 86 |
| **Design with external** community - Requires planning the learning experiences by listening to and working with the community external to the school or college. | 28, 65, 66, 67 86, 95 |
| **Increase and enhance use of learning** technology - Requires learning technology that is accessible, maintained, and used extensively. | 11, 78, 92 |
| **Be cost-effective and sustainable** - Requires constant attention to developing needed resources, improving cost-effectiveness, and operating with economic sustainability. | 28, 65, 66 |
| **Improve accountability** - Requires better accounting for learning done in a variety of ways and that the institution as a whole be performance-based. | 78, 92, 94, 96, 97, 98 |
| **Respond to all learners** - Requires increased focus on, responsiveness to, and success for all learners. | 14, 78 |
| **Be a component of lifelong learning** - Requires the learning experience to build on prior learning experience and be integrated with and encourage lifelong learning. | 13, 64, 86, 103 |
| **Be realistic** - Requires that recommendations for improving learning be feasible in terms of available resources. | 10 |
| **Enhance global** perspective - Requires an international perspective of learning expectations, processes, and organization. | 20, 21, 78 |
| **Give pride and joy** - Requires developing more pride and joy (recognition and reward) in the learning experience by staff and learners. | 99 |

**Table 2.**
**Recommended Design Features of Learning Context for Career and Technical Education**

| **Recommended Design Features** | Related Reviews |
|---|---|
| **Align with the larger context** - Assures that the context for CTE is supportive and contributes to the larger context faced by the whole school or college of which CTE is a part: | |
| **Become a learning system** - Insures that secondary and postsecondary career and technical education operate as a coherent and connected system (e.g., trouble-free transfer of learning internally and externally, staff teaming across educational levels, unlimited advancement and continued learning, aligned pre-requisites, concurrent and dual enrollment). | 1, 37, 42, 63 67, 68 69, 86 87, 88, 89 |
| **Build partnerships** - Aggressively develops new and renewed alliances with the community to enhance learning opportunities in career and technical education. | 8, 9, 17 18, 65 66, 69 |
| **Attract and sustain teachers** - Provides feasible ways of staffing and staff development for teachers to insure very high quality career and technical learning opportunities. | 70, 71 72, 74 |
| **Define high quality** - Describes a coherent and cohesive set of features for model career and technical education and needed changes in current programs. | 5, 6, 15 16, 20 |
| **Improve image**-Very positively enhances perception of career and technical education to students, parents, and school and college staff. | 20, 49 |
| **Provide adequate and flexible resources** - Promotes resource sustainability (e.g., better use of existing sources, developing new sources, increasing flexibility of use, being more realistic in plans) for providing and continuously improving learning opportunities in career and technical education. | 6, 8 |
| **Develop leadership** - Identifies the needed skills and develops an effective administrative leadership cadre for present and future career and technical education. | 8, 73 |
| **Serve all students** - Is perfectly clear that career and technical education provides learning opportunities that are valuable and accessible to all students. | 12, 16 19, 24 76 |
| **Expand thinking** - Openly considers new and innovative approaches to career and technical education and the effective breakdown of resistance to make needed changes. | 12 |
| **Include multiple purposes with appropriate assessment** - Seriously affirms that career and technical programs address many purposes (e.g., work, family, community; short and long term goals; various educational levels) that are all valued and require varied foci and means of assessing learning. | 1, 2, 3, 6, 8 |

## Table 3.
## Recommended Design Features of Learning Audience for Career and Technical Education

| **Recommended Design Features** | Related Reviews |
|---|---|
| **Align with features of other design elements** - Assures that the design features of learning audience are consistent with and supportive of the design features recommended for other design elements. | |
| **Identify the various groups who are to benefit** - identifies who is to benefit from career and technical education in name and characteristics. Include the following categories of learners: | |
| **Individuals** - Youth and adults. | 1, 17, 19 23, 24 25, 26 49, 86, 90 |
| **Organizations** - Business and industry, organized labor, other educational institutions (i.e., K-12, college, university), government agencies, and professional associations. | 2, 11, 17 28, 86, 90 |
| **Geographic regions** - Communities, regions within states, states, multi-state regions, nation, and world. | 1, 6, 11 12, 16 19, 20 |
| **Society-at-large** - Whole social and economic culture. | 1, 2, 3 12, 15 18, 24 25, 27 86, 90 |
| **Describe the needs of the groups who are to benefit** - identifies the needs, both educational and supporting services, by the groups who are to benefit from career and technical education. | 1, 8, 15, 49 |
| ***Needs of Individuals*** | |
| **Initial specialization** - Those needing preparation for first real roles and responsibilities in work, family, and community life; could be focused on career cluster or specific occupation; includes all aspects of the industry; could be youth or older individuals entering work, family, and community roles for first time. | 2, 3, 7 11, 16 18, 23, 49 |
| **Exploration** - Those needing more in-depth study and first-hand experience with their own interests, aptitudes, and capabilities and the world of work, family, and community; includes career and technical planning and decision making skills; could be individuals of young age contemplating future career and technical opportunities or older individuals considering role mobility, both voluntary and involuntary. | 1, 5, 6, 7 12, 17 23, 25, 90 |
| **Retraining** - Those needing to prepare for different roles and responsibilities in work, family, and community life because of a wish to change roles and responsibilities or a need to change because of changing context (i.e., job lay-off, or loss of job). | 1, 8, 18 23, 28 |
| **Updating/advancement** - Those needing continuing education or changes in work, family, and community roles and responsibilities they currently have in order to keep/perform better in the role or seek the opportunity of promotion in salary, position, or other benefits. | 1, 2, 8 20, 23 28, 64 103 |

| | |
|---|---|
| **Academic** - Those needing general academic skills not specific to career and technical education; could range from basic literacy or remediation in reading, communications, and mathematics to advanced theoretical knowledge in science, social studies, arts, language, and mathematics; could be individuals of all ages. | 1, 4, 5, 6 7, 23, 24 25, 26 |
| **Awareness/orientation** - Those needing an introduction to the world of work, family, and community roles and responsibilities and opportunities; could be individuals of elementary age or immigrants or others entering work, family, and community roles and responsibilities for the first time. | 1, 2, 5, 7, 8, 23, 24, 25, 76 |
| **Support services** - Those services needed in support and encouragement to be successful in career and technical education (i.e., child care, transportation, financial aid, health, counseling). | 16, 18, 25 |
| **Further education and living** - Those needs for both continued learning and the opportunities it provides as well as preparing for direct and successful entry into the world of work, family, and community life. | 3, 17, 19 25, 28 63, 64, 103 |
| ***Needs of Organizations, Geographic Regions, and Society-at-Large*** | |
| **Willingness to partner** - Need for working together to gain mutual benefits not available effectively or efficiently when working separately. | 5, 6, 17, 28 |
| **Access to competence** - Need for continuously well prepared workers, family members, and community contributors leading to economic and social development and improved quality of life. | 8, 11, 17, 18, 19 22, 25, 27, 28, 76 |
| **Attend to long- and short-term benefits** - Addresses both the short- and long-term needs of the groups who are to benefit from career and technical education. | 8, 11, 16, 18, 22, 25, 28 |

**Table 4.**
**Recommended Design Features of Learning Signature for Career and Technical Education**

| **Recommended Design Features** | Related Reviews |
|---|---|
| **Align with features of other design elements** – Assures that the design features of learning signature are consistent with and supportive of the design features recommended for other design elements. | |
| **Create an accurate image** - Is authentic to the aims, operation, and accountability of career and technical education; is real in terms of how career and technical education goes about its operation.<br>*Include as Essential Defining Concepts*<br>• Balanced attention to knowledge and skills.<br>• Learner centeredness.<br>• Link to real work, family, and community life.<br>*Include as Important Defining Concepts*<br>• Building network of relationships and opportunities.<br>• Reaching ever-changing high standards.<br>• Sustaining human potential and quality of life. | 5, 15, 29 30, 32, 33, 85 |

| | |
|---|---|
| **Develop a common understanding and ownership by stakeholders** - Is easily understood by and rallies all groups holding an interest in career and technical education, including learners, staff, and wider community. | 29, 30, 31 |
| **Provide a unique character** - Highlights the specialness of career and technical education and distinguishes it from other educational programs. | 32, 33, 34 |
| **Confirm a worthy identity** - Affirms a morally and intellectually justifiable focus for career and technical education. | 31, 33 |
| **Integrate consistently into the operation of the institution** - Is woven into and radiates from all elements of career and technical education's operation. | 30, 32 |
| **Give focus and coherence to all components** - Unites all elements of career and technical education in a common purpose. | 30, 33 |
| **Include all learners** - Affirms, embraces, and affects the spirit of all learning audiences served by career and technical education (e.g., young and old, female and male, poor and rich, all ethnic groups). | 29, 33, 63, 64, 76 |
| **Communicate powerfully an unbroken chain of commitment (the promise)** - Is a forceful and energetic symbol of career and technical education. | 32, 33, 34 |

**Table 5.**
**Recommended Design Features of Learning Expectations for Career and Technical Education**

| **Recommended Design Features** | Related Reviews |
|---|---|
| **Align with features of other design elements** - Assures that the design features of learning expectations are consistent with and supportive of the design features recommended for other design elements. | |
| **Includes achieving academic, employability, and specific occupational knowledge and skills.**<br>• **Academic knowledge and skills** - Includes knowledge and skills in language, mathematics, science, social studies, and arts.<br>• **General career and technical knowledge and skills** - Includes knowledge and skills needed in all work, family, and community roles and responsibilities, including:<br>• **Life Planning** - Knowing self and choosing responsibly; interrelating work, family, community, and personal life; caring for personal wellness; working safely.<br>• **Relationships** - Collaborative intelligence; understanding organizations; understanding diversity; relating interpersonally.<br>• **Technology** - Using technology (as aid, content, context).<br>• **Managing** - Managing resources; managing time; setting expectations and evaluating progress; making decisions; planning and organizing; recognizing and resolving problems; taking action; being able to engage; being entrepreneurial.<br>• **Work Ethics** - Practicing ethical and moral habits in work, family, and community life.<br>• **Continued Learning** - Learning to learn (and unlearn); self-sustaining.<br>• **Specific career and technical knowledge and skills** - Includes knowledge and skills | 2, 3, 5, 11, 12 13, 15, 16, 17 18, 19, 20, 33, 36, 37, 38, 40, 41, 42, 43, 44, 45, 46, 47, 48, 66, 69, 85, 103 |

| | |
|---|---|
| needed for particular work, family, and community roles and responsibilities (i.e., in the context of work roles, these knowledge and skills are those needed in specific occupational clusters and jobs and all aspects of the industries where the jobs are located). | |
| **Communicate clearly and concisely the results or standards expected and** promised - Makes straightforward and coherent statements of what learners are expected to accomplish. | 33, 35, 36, 37, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 92, 97, 98 |
| **Involve reaching for a meaning of educational excellence that provides challenges and opportunities** - Addresses the highest and most rigorous expectations for what it means to be an educated person from a career and technical perspective, even beyond what is easily measured. | 8, 13, 20, 36, 37, 40, 41, 42, 43, 44, 45, 46, 47 |
| **Direct attention towards changing context and challenges of life upon entering the 21st century** -Is future oriented and leads to action as relates to the problems and opportunities in work, family, and community life. | 2, 3, 5, 6, 7, 12, 13, 21, 22, 31, 33, 36, 37, 38, 41, 42, 76, 85, 90 |
| **Survive challenges from key internal and external stakeholders in career and technical education** - Seeks examination and support by stakeholders in career and technical education (i.e., students, staff, business and industry, organized labor, other educational institutions, community, professional associations, and accreditation agencies). | 11, 15, 30, 35 36, 41, 42, 97, 98 |
| **Prepare learners to be active change agents in improving the future state of affairs in society** - Prepares learners to be engaged in improving the quality of life in our culture, particularly as relates to work, family, and community roles and responsibilities. | 11, 33, 38, 39, 76, 77, 79, 85, 90 |
| **Contribute to lifelong learning** - Enhances competence to continue to learn, integrates new learning with past learning, and encourages further learning. | 16, 33, 36, 38, 64, 103 |
| **Represent balanced attention to all areas of human talent and development** - Addresses all areas of competence and skill (i.e., occupational, academic, aesthetic, and social). | 6, 12, 33, 38, 39, 41, 85, 86, 103 |
| **Address key life places (i.e., personal, work, family, and community)** - Addresses the roles and responsibilities of personal, work, family and community life. | 23, 13, 19, 33, 35, 36, 38, 41, 85, 86 |

**Table 6.**
**Recommended Design Features of Learning Process for Career and Technical Education**

| **Recommended Design Features** | Related Reviews |
|---|---|
| **Align with features of other design elements** - Assures that the design features of learning process are consistent with and supportive of the desired features recommended for other design elements. | |
| **Build a progressive path to achieving external standards** - Has clear end results and fosters continuous progress toward these results, leads to meeting demanding academic and general and specific career and technical learning expectations that are recognized by further education institutions and business and industry, and includes independent assessment of learning expectations. | 15, 16, 18, 55 |

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|---|---|
| **Engage learners in relevant and challenging experiences** - Instills excitement, is self-motivating, brings out best talents and performance, inspires commitment, opens opportunities, appears doable, provides needed support, is enjoyable, is demanding, connects to learner's vision of future, and engages the learner in knowledge building. | 6, 7, 11, 30, 31, 32, 33, 50, 51, 52, 54, 55, 89 |
| **Be learner**-centered -Personalizes to the needs and prior learning experiences of each and every learner, closely connects teaching and counseling/student support services in advance learning and career development, allows learners to select from multiple learning strategies to reach learning expectations, provides just-in-time and just-for-you learning experiences, includes multiple entry and exit points, is managed by the learners with guidance by staff, and leads learners to connect learning from different sources and construct a coherent view of their world. | 12, 23, 24, 50, 51, 52, 53, 55, 56, 57, 58, 60, 64, 76, 85, 86, 89, 92, 103 |
| **Use real-life applications** - Connects directly with business and industry and other life contexts; includes internships in employment context; reflects community needs and interests; and involves external audiences in planning and execution. | 8, 11, 17, 28, 53 55, 57, 66, 85, 86 |
| **Integrate academic and career and technical learning** - Integrates and relates academic and career and technical education as it is needed in the context of work, family, and community roles and responsibilities. | 14, 19, 36, 37, 69, 85, 90 |
| **Use and closely coordinate non-school and school learning settings** - Makes ample use of multiple learning settings in and out of the school (i.e., workplace, home, community) and careful planning and supervision of learning in non-school and school settings. | 49, 55, 57, 66, 67, 69, 85 |
| **Use project-based learning** - Uses real projects drawn from needs external to the educational institution; results in products valued outside of the school or college; and encourages learning projects to be initiated and managed by the learners. | 56, 85, 89 |
| **Involve teachers as guides and facilitators** - Recognizes and values contribution of learners and importance of involving learners in managing the learning; is directed by staff (as navigators) who are up-to-date with subject matter, its application, and use of information technology in learning. | 49, 50, 52, 53, 54, 55, 56, 58, 85, 86, 89 |
| **Apply continuous and multiple forms of assessment to improve learning** - Uses frequent, immediate, and a variety of assessment and feedback strategies to improve the learning experience. | 55, 92, 93, 94 |
| **Create and nurture learning communities** - Creates and nurtures a sense of community by fostering close interaction of learners with other learners, teachers with learners, and teachers with other teachers; involves abundant cooperative learning; uses peer teaching; and blends learners of different ages and experiences. | 50, 51, 53, 60, 62, 76, 85, 86, 89 |

## Table 7.
## Recommended Design Features of Learning Organization for Career and Technical Education

| Recommended Design Features | Related Reviews |
|---|---|
| **Align with features of other design elements** - Assures that the design features of the learning organization are consistent with and supportive of the design features recommended for other design elements. | |
| ***Organize students so there can be:*** | |
| Learning that is learner-centered for each student and based upon external standards (i.e., business and industry, further education) and accountability for individual success. | 13, 63, 89 |
| Learning in teams and cohorts within and across subject using project-based learning and learning communities. | 50, 51, 52, 53, 55, 56, 57, 60, 62, 74, 85 |
| Learning that is integrated across educational levels and interdisciplinary subject areas. | 11, 58, 60, 68, 69, 85 |
| Learning that is grouped around career clusters or major of learner's choice | |
| Learning that is more project-based in real-world context. | 56, 62, 85 |
| Building by learners of their own networks of experts, consultants, and supporters. | 60, 62, 68, 74, 85, 89 |
| Equal access to learning by all learners. | 11, 54, 62 |
| Lifelong learning and productive participation in work, family, and community life. | 23, 62, 64, 85 |
| Self-grouping of learners around areas of interest and learning events/activities within career clusters. | 58, 60 62, 74, 89 |
| Promise that each and every learner is known by at least one staff member and provided with advocacy by a practitioner in their career field as needed. | 58, 59 60, 61, 62 |
| Pursuit of topics of interest to learners in more depth, skill, and refinement. | 17, 60, 64 |
| Building of self-esteem, pride, and a joy for learning and the world of work, family, and community life. | 60, 64 |
| Linking together students across distance using technology. | 78 |
| Peer teaching/mentoring of other students. | 50, 51, 56, 60, 74, 89 |
| ***Organize time to:*** | |
| Result in achievement of necessary levels of competence and reaching of work, family, and community standards and benchmarks. | 8, 13, 16, 17 |
| Take advantage of solid academic, career and technical, and continuing education study and work, family, and community experience. | 8, 69 |
| Give value and credit for (and not repeat) prior learning experience. | 61, 63, 67, 69 |

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| Be sufficiently flexible to meet unique needs of students and topics to be learned. | 10, 13, 60, 61, 62, 63, 85, 89 |
| Be self-paced and self-managed with specific goals and checkpoints. | 60, 61, 62, 63, 89 |
| Integrate and coordinate learning across educational levels and work settings. | 11, 17, 62, 68, 69, 85 |
| Be widely accessible in terms of time, place, and delivery. | 10, 63 |
| Be planned in a just-in-time manner based on local, regional, and national needs and to eliminate time as a barrier to competency-based learning. | 14, 61 |
| Occur individually and in small groups and teams. | 58, 62, 89 |
| ***Organize learning settings to:*** | |
| Allow learner's access to mentors, coaches, experts, and authentic context; learning settings are flexible and centered around the learning experience. | 62, 85 |
| Allow learner's access to a variety of settings (i.e., formal, informal, self, small groups, large groups, on-line, studios, in school/college, in business, in community). | 17, 62, 85 |
| Create multiple strategies for learning and choices (i.e., classes, books, experience -- cooperative education, internships, shadowing, self-study, on-line). | 60, 61, 62, 85 |
| Form small learning communities. | 62, 68, 74, 85 |
| Have learning that is kept up-to-date (i.e., has built-in revision cycle). | 65 |
| Have needed technology readily accessible through collaborative agreements with governmental, non-profit, and profit agencies. | 65 |
| Coordinate and combine school-, work-, and community-based learning; expand collaborative learning. | 2, 14, 16, 17, 50, 85 |
| Have learning settings designed by learners and being able to add and subtract to/from the setting as needed. | 14, 85, 86 |
| Network learning settings with input from learners to form patterns that support learning. | 60, 85 |
| ***Organize subjects or fields of study to:*** | |
| Have learning lead to competence needed in work, family, and community roles and responsibilities. | 12, 16, 18 |
| Integrate the various subjects. | 11, 16, 60 |
| Make learning standards-based and attend to how results will be assessed. | 16, 17, 58 |
| Allow experiential application in work, family, and community environments. | 53, 62 |
| Make learning project-based. | 56 |
| Prepare for the changing nature of work, family, and community life and provide for cross training within and among career clusters. | 58, 62, 89 |
| Allow learning to be driven by student interests and characteristics as relates to work, family, and community roles and responsibilities. | 2, 89 |
| Insure the same learning result from different methods and ways of delivering learning and from different teachers and perspectives of learning. | 62, 68 |
| Modularized learning to increase access at different times and places and different delivery modes. | 61 |

| | |
|---|---|
| Allow learning to progress from basics (if prior learning is not awarded) to in-depth knowledge and experience. | 64 |
| Have learning be sensitive to and affirm cultural diversity (domestic and international) in all subjects. | 20, 76, 89 |
| ***Organize staff to:*** | |
| Co-facilitate learning with students and others and model collaboration. | 17, 60, 62, 72 |
| Integrate learning across subject, professional roles, and learning settings. | 16, 62 |
| Have staff be broadly inclusive of a variety of groups (i.e., licensed teachers, employers, parents, community leaders, labor union representatives). | 14 |
| Have staff engaged in joint planning and delivery of learning experiences. | 12, 75 |
| Have staff engaged in and be recognized for their own continuous professional development. | 16 |
| Have staff effectively manage the learning experience. | |
| Have staff be flexible in terms of subjects and levels that can be addressed through blending of roles and cross training. | 14 |
| ***Organize decision making to:*** | |
| Coordinate learning among all education levels (i.e., K-12, community college, and university). | 67, 69 |
| Involve learners in the decision-making process. | 12, 50, 56, 60, 62 |
| Make decisions based on research and data. | |
| Have broad participation (i.e., students, faculty, counselors, administrators, community, policy makers, funding sources, and employers) in decision-making processes that are inclusive and multidimensional - both vertically and horizontally. | 77 |
| Make the learning meaningful. | 50, 56, 62 |
| Have shared ownership in decisions and with common agreement. | 60, 62, 77 |
| Have external organizations and groups (i.e., employers) decide if the students meet the needs of their profession. | 42, 43, 44, 45, 46, 47 |
| Decentralize decision making to all stakeholders (i.e., those most affected, knowledgeable, and responsible). | 17, 18, 62, 77 |
| Have policy makers and funding sources share in decision making to improve learning experiences and provide financial support. | 8, 18 |
| Have staff decide if the learning experience is consistent with mission, vision, and beliefs of the organization and profession. | 86 |

## Table 8.
## Recommended Design Features of Learning Partnership for Career and Technical Education

| Recommended Design Features | Related Reviews |
|---|---|
| **Align with features of other design elements** - Assures that the design features of learning partnerships are consistent with and supportive of the design features recommended for other design elements. | |
| **Focus on enhancing student learning** - Focuses primarily on meeting student needs and learning. | 4, 11, 20, 65, 66, 67, 68,69 |
| **Collaborative, mutually beneficial relationship** -There is reciprocity in short- and long-term gains by all partners and sharing of common goals and values. | 17, 18, 20, 65, 66, 69, 86 |
| **Working through partnerships as the regular way of operating** - The use of partnerships is always an early consideration in the operation of the educational institution and everyone is involved in forming partnerships. | 10, 11, 17, 20, 65 |
| **Agreement to continuous evaluation, re-thinking, and innovation** - There is willingness and energy for improving the partnership over time and, with a changing context, willingness to draw partnership to an end when appropriate. | 10, 20, 65 |
| **Joint commitment and engagement** -There is tangible agreement to be fully engaged in working and investing together on continuous bases. | 8, 11, 18, 20, 65, 67, 69, 86 |
| **Clear roles and contributions** - Specific roles and responsibilities are clearly established and supported by all partners. | 4, 16, 18, 65, 69, 86 |
| **All needed partners are represented and deliver on promises** - All partners are active in the partnership and have ability to deliver on their commitments. | 12, 16, 17, 18 65 |
| **Time and funding is committed for planning and communications among partners** - The resources to sustain the partnership are provided by all those involved. | 16, 17, 18, 65 67 |
| **Timely sharing of information** - Information sharing is planned, monitored, and flows easily and openly in a timely manner among partners. | 12, 18, 65, 67 |

## Table 9.
## Recommended Design Features of Learning Staff for Career and Technical Education

| Recommended Design Features | Related Reviews |
|---|---|
| ***Staff Competencies*** | |
| **Align with features of other design elements** - Assures that the design features of learning staff are consistent with and supportive of the design features recommended for other design elements. | |
| **Knowledge of subject matter (learning expectations)** - Includes knowledge and skills such as theory and application to work, family, and community roles and responsibilities; certification by external organizations such as industry and professional associations; varied and in-depth experience in work, family, and community roles; all aspects of the industry; general career and technical skills and knowledge such as workplace readiness/employability skills; needs for work, family, and community roles and responsibilities; academic foundations and basic skills; and interrelationships of work/family/community life. | 16, 17, 20, 70, 72, 73, 75 |
| **Know about making learning authentic and contextualized** - Is able to relate learning to real situations outside of school/college in terms of planning and assessing learning experiences. | 12, 16, 70, 72, 73 |
| **Able to guide learning (i.e., faculty, counselor, designer)** - Includes skills such as focusing on learning expectations, responding to diverse learners, designing instruction (both formal and informal), pre-planning and just-in-time instructional responses, assessing learning, using information technology, integrating curriculum, guiding cooperative and project-based learning, and coordinating school- and work-based learning. | 12, 16, 17, 50, 51, 53, 55, 56, 66, 70, 72 |
| **Work in teams and as partner** - Includes skills such as collaboration, teamwork, interpersonal skills, and fostering partnerships to bring in specialized expertise. | 12, 20, 70, 72, 73, 74, 86, 89 |
| **Be creative and entrepreneurial** - Includes skills such as risk-taking, being courageous and visionary, willingness to try new ideas, and troubleshooting to improve learning. | 70, 72, 73, 86 |
| **Will continue to learn** - Includes skills such as commitment to being up-to-date, continually improving practices, being lifelong learner, being flexible and proactive, recognizing the importance of staffing effectiveness of CTE; valuing and contributing to regular assessment of their practice; seeing lifelong learning as a shared responsibility of individuals and institutions. | 12, 16, 64, 70, 72, 89 |
| **Lead in and use continuous quality improvement** - Staff applies continuous quality improvement (e.g., plan, act, data collection, reflection) to the learning experience and program with expectations of excellence that are constantly up-dated, performance that is continually assessed, and rewards and recognition that are closely linked to meeting expectations. | 70, 72, 73 |
| **Willing and able to take leadership** - Staff takes on leadership roles when needed from a variety of positions. | 11, 70, 73, 86 |
| **Able to train others to do training** - Staff knows how to train-the-trainer. | 70 |

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| **Ensure that each learner is known and served very well** - Staff takes time to get to know each learner deeply (including prior learning) and provide for the "wrap-around" and advocacy support (e.g., academic, social, psychological, and physical) needed by each learner in an integrated fashion. | 19, 70, 86, 92 |
| **Handle multiple roles** - Staff knows their roles and responsibilities and are competent and willing to make a contribution to the learning experience in a variety of ways (e.g., teacher, counselor, mentor, leader, follower, supporter, resource manager). | 70, 72, 73, 86 |
| **Build learning communities** - Staff facilitates the development of strong learning communities, including those inclusive of secondary and postsecondary staff, using skill such as organizing and leading teams, understanding and valuing diversity, establishing trust, balancing freedom and responsibility, being supportive, and building and maintaining a positive attitude. | 12, 68, 70, 73, 76, 86, 87, 89 |
| **Value diversity** - Staff understands, values, and incorporates diversity into the fabric of learning, and can operate effectively with a diversity of learners and partners. | 70, 76, 86, 89 |
| **Have pride in work and instilling pride in learners** - Staff are proud of their work and able to instill pride in students of their own work. | 70, 73 |
| ***Staffing Strategies*** | |
| **Align with features of other design elements** - Assures that the design features of staffing strategies for learning staff are consistent with and supportive of the design features recommended for other design elements. | 12, 20, 67, 68, 69, 72 |
| **Form partnerships with sources of teaching skills** - Includes business and industry, labor, professional associations, technical and community colleges, between secondary and postsecondary institutions, universities, and accreditation agencies as potential partners. | |
| **Develop compensation plans for faculty in concert with collective bargaining units in order to compete for their skills in the labor market** - Includes consideration of separate pay scale for CTE teachers, bonuses, stipends, and contracting with industry for joint appointments. | 70, 72 |
| **Use faculty skills from other than CTE faculty** - Uses the teaching skills of other staff through cross training (i.e., academic faculty, counselors). | 89 |
| **Develop additional ways to obtain needed teacher training** - Includes making teacher training more self-directed and using distance delivery. | |
| **Develop additional funding sources for faculty and faculty training** -Includes increased tuition for CTE courses, fees for services provided through CTE facilities and staff, and partnerships with sources of teaching skills. | 72 |
| **Make use of current students** - Includes using more skilled and experienced CTE students (youth and adult) to do peer training and provide assistance to teachers. | |
| **Identify what competencies each group of staff needs** - Identifies the specific roles for each source of staffing identified above. | |
| **Attract former students** - Includes recruiting former students and assisting in their faculty training (i.e., grow your own). | |

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| **Provide succession plans for staffing** - Systematically plans for filling positions of staff that will be leaving. | |
| **Conduct own faculty training** - Hires specialized staff development providers alone or in consortium agreements with others. | 71 |
| **Recruit qualified retirees from other occupations** - Includes the military as well as civilian occupations; offer part-time, flex-time, and shared-time opportunities; certification issues will need to be addressed and brought up-to-date with current realities. | 103 |
| **Challenge and encourage role for senior staff** - Recognizes and encourages more experienced staff to take responsibility to assist with and guide staffing and staff development strategies. | 12 |
| ***Staff Development Providers*** | |
| **Professional associations.** | |
| **Business and industry.** | 71 |
| **Consortia arrangements among institutions.** | 11 |
| **Internet.** | |
| **In-house training programs.** | 71 |
| **Consultants.** | |
| **Colleges and universities.** | |
| **Learners (alone, in self organized groups, and study circles).** | |
| **Peers and colleagues.** | 71 |
| **Community agencies and organizations.** | |
| **Bendor.** | |
| **Academic/ liberal arts faculty.** | |
| ***Staff Development Features*** | |
| **Align with features of other design elements** - Assures that the design features of staff development for learning staff are consistent with and supportive of the design features recommended for other design elements. | |
| **Relevant and valuable** - Provides high-quality information, access to key people, is current and cutting edge, uses flexible delivery methods, is just-in-time as needed; provided by very competent staff -- dynamic, provocative, challenging, and flexible. | 71 |
| **Direct connections to business and industry** - Provides connections to business and industry through location of training, support, and credentialing; addresses all aspects of industry and learning through, about, and for work. | 12 |
| **Give high priority** - Is important to the educational institution, provides sustained support and incentives and sufficient resources; provides short- and long-range plans; and is viewed as investment rather than short-term expense. | 20 |
| **Integrate with vision and operation of educational institution** - Is closely coordinated, coherent, and imbedded in the mission, vision, needs, principles, priorities, plans, and constraints of the educational organization; is accessible when and where needed; and is supported and modeled in the organization's leadership. | 86 |
| **Model use of continuous quality improvement strategies** - Has built-in processes and tools for assessment and adjustment and uses flexible delivery options. | 12, 71, 86 |

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| **Make use of distance delivery and computer enhanced learning** - Includes learning for staff through use of remote sites and supported by information technology. | |
| **Owned by staff** - Is based on self-identified needs, self-directed, gives considerations to all staff, grounded in local capacity, responsive to individual development plans, and linked with accountability that is addressed by all who are involved. | 12, 71 |
| **Model of CTE reform initiatives** - Demonstrates initiatives such as state-of-the-art teaching and learning, curriculum integration, contextual learning, and partnerships of industry and education; and sustained over time. | 12, 72 |
| **Address all aspects of the industry and learning through, about, and for work** - Focuses on all dimensions of career and technical education for work roles and responsibilities. | 2, 72 |
| **Include all staff** - Responds in a coordinated and consistent way to the educational needs of all those making a contribution to the learning experience and educational organization and builds educational capacity and the idea of a learning community throughout the organization. | 12, 74, 87 |
| **Address both subject matter and learning** - Includes attention to content and teaching and learning processes. | 75 |
| **Improve performance of staff** - Applies rigorous standards that are authentic for the organization, visibly connects new learning to the culture and everyday practice of the organization, and expects results in improved learning and retention for students. | 19, 72 |
| **Include key stakeholders in school/college (e.g., principals, deans, counselors, staff)** - Addresses all components of staff, as well as key external partners and interest groups. | 70, 87 |
| **Include pre-service and in-service needs** - Gives attention to initial staff development needs, including adjunct and part-time staff, as well as continuing education and training. | 70, 71 |
| **Promote sharing and collegiality among staff** -Views all categories of staff as assets, builds on the strengths of the staff, and encourages sharing of good practices among the staff (i.e., staff teaching staff, making tacit knowledge more explicit, publishing and presenting effective theories and practices). | 12, 70, 71, 74, 89 |
| ***Learning Leadership*** | |
| **Align with features of other design elements** - Assures that the design features of learning leadership are consistent with and supportive of the design features recommended for other design elements. | |
| **Knows CTE** - Knows the history, traditions, mission, operation, and finance of CTE. | 1, 73 |
| **Entrepreneurial, creative, risk-taking** - Is willing to be bold and open to educational change and reform. | 77, 78, 79, 80, 81, 82, 83, 86 |
| **Engaged in and supports professional development** - Seeks continuing professional development for self and others. | 73, 79 |
| **Willing to partner** - Is enthusiastic about working with wide range of partners in advancing CTE. | 77, 79 |
| **Empowering of others** - Has participatory, collaborative, and shared leadership style. | 12, 77, 79, 80, 81, 82, 83 |

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| **Supports integration of academic and CTE and articulation of secondary and postsecondary education** - Advocates and supports major education reforms relating to CTE such as curricular integration and program articulation. | 73 |
| **Committed, has passion for, believes in, and advocates for CTE** - Is strong supporter of CTE. | 73 |
| **Has vision and able to communicate it** - Possesses vision for field of CTE and is able to communicate it effectively. | 73 |
| **Able to lead change** - Is competent in leading transformation of CTE. | 73, 77, 78, 79 |
| **Able to manage accountability** - Supports and encourages use of assessment to insure accountability. | 80, 81, 82, 83, 86 |
| **Able to manage multiple priorities and information overload** - Handles the stress and challenge of complex environment with competing priorities and abundant information. | 73, 77, 78, 79, 80, 81, 83, 86 |
| **Flexible and competent in multiple environments** - Works effectively in a wide variety of leadership contexts and settings. | 73, 76, 77, 78, 79, 80, 81, 82, 83, 86 |
| **Has "can-do" attitude with courage and tenacity** - Has self-confidence and persistence to make CTE work effectively. | 73, 77, 79, 80, 81, 82, 83, 86 |
| **Has high expectations** - Demands high performance from others and self in operation of CTE. | 73, 77, 78, 79, 80, 81, 82, 83, 86 |
| **Is an instructional leader - Knows** the education enterprise and recognizes the central importance of attention to the learning experience. | 12, 73, 78, 86 |

## Table 10.
## Recommended Design Features of Learning Environment for Career and Technical Education

| **Recommended Design Features** | Related Reviews |
|---|---|
| ***Technology Features*** | |
| **Align with features of other design elements -** Assures that the design features of learning technology are consistent with and supportive of the design features recommended for other design elements. | |
| **Enhance learning** - Solves problems; produces products; adds new functionality; develops new skills; saves time; is appropriate to purpose; is a learning tool; supports (not drives) learning; encourages more advanced learning; provides additional ways to learn; responds to new reform initiatives such as project-based learning, collaborative learning, authoring, inquiry and knowledge construction, higher order thinking, animation, integration of curriculum, and creativity; centers on learners by being adaptive to individual needs; supports self-directed use; bridges to the future; and is capable of customization. | 5, 8, 13, 78 |

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| **Increase accessibility** - Is affordable; available to all those who can benefit from it; is in sufficient quantity; is easy to use (level of difficulty should be in line with purpose); is close at-hand; has no barriers; is distributed; is personalized; is portable; provides user-friendly training and technical support when needed; requires low maintenance and overhead; is easy to troubleshoot and repair; and is easy to update and upgrade. | 13, 91, 78 |
| **Tie to industry standards and expectations** - Is on par, up-to-date, and compatible with what is in use in business and industry, and promotes adapting to and using new advances in technology. | |
| **Facilitate communications and relationships** - Helps make connections; locates, filters, and interprets information; bridges time and distance; helps finds others with similar interests and needs; stimulates teamwork; supports social networks; taps into new resources; promotes collaboration; and includes responsible use of technology from legal and ethical perspective. | 13 |
| **Encompass a wide range of tools, equipment, and software** -Recognize that learning technology is broadly conceived and includes much more than computers and other information technology. | 5, 10, 67 |
| **Be affordable and sustainable** - Leads to sound investments (i.e., right time, right equipment and software, right price) for short- and long-term; includes partnerships to assist with sustainability; and breaks down barriers to joint use such as cultural and organizational turf. | |
| *Facilities Features* | |
| **Align with features of other design elements** - Assures that the design features of learning facilities are consistent with and supportive of the design features recommended for other design elements. | |
| **Be learner determined** - Fits the learner, is least restrictive, and involves the learner in its design; creates a feeling of being owned by students and staff, of being at home, and lifelong connection to the learner; gives the learner a sense of identity, sometimes associated with place -- but increasingly with the learning signature and with what is learned and how it is done; assumes and supports informal learning; is responsive to the needs of learners who vary in age, socio-economic status, cultural background, prior learning experiences, full-time versus part-time status, and learning style; and supports learning by staff as well as students. | 54, 64, 83, 85, 86, 89 |
| **Be flexible and adaptable** - Facilitates change, adjustment, reconfiguration, and variety depending on needs; is readily able to shrink or expand as needed; gives careful attention to adjacencies needed for learning; provides rich variety of spaces and furnishings. | 85 |
| **Facilitate and support learning communities** - Supports taking learning anywhere and anytime, integrates staff and students, provides for gracious food service and relaxation; fosters close relationships among and between learners and staff; and supports and encourages informal learning and the productive interaction of informal and formal learning. | 85, 86 |

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| **Blend with work, family, and community places** - Connects to, replicates, uses, and provides opportunity to experience work, family, and community places; contributes to being a seamless extension of the learner's life environments; includes consideration of all of the possible settings that can support the desired learning experiences, which includes, but is not limited to, school buildings; makes strong and visible connections among learning settings; supports reciprocity among settings; and made up of carefully constructed, yet dynamic and constantly changing, patterns of settings needed for effective learning experiences. | 2, 84, 85, 87, 88, 89, 90 |
| **Support major reform initiatives** - Provides the variety of spaces and equipment to readily support project-based learning; encourages and facilitates the close linkage of career and technical education and academic education; encourages and facilitates linkage of career and technical education in high schools and colleges; and provides multiple and ready access to learning technology. | 84, 85 |
| **Be community centered** - Takes account of culture of community, Builds community, is a center of the community, is used by the community, and is welcoming to the community. | 83, 85 |
| **Be stimulating, uplifting, and dynamic** - Encourages creativity and growth, is beautiful and respected, is provocative of imagination, responds to self-planning, and supports life balance. | 84, 85, 86, 87, 88 |
| **Serve as a learning tool** - Provides opportunities for learning by exposure of facility's infrastructure (i.e., plumbing, electrical, heating, communications). | 84, 85 |
| **Enhance and fit with natural environment** - Mirrors and contributes to natural surroundings and places for relaxation and rejuvenation; and contributes to ecological sustainability. | 83, 84 |
| **Include places for staff development** - Provides spaces that specifically support staff development in ways that model the learning experiences that staff is being encouraged to deliver; supports individual and team development. | 85 |
| **Provide for both general and specialized study** - Provides the settings conducive to development of general and specialized CTE competence in order to reach learning outcomes. | 85, 86, 89 |

## Table 11.

## Recommended Design Features of Learning Accountability for Career and Technical Education

| **Recommended Design Features** | Related Reviews |
|---|---|
| **Align with features of other design elements** - Assures that the design features of learning accountability are consistent with and supportive of the design features recommended for other design elements. | |
| **Insure significant and meaningful consequences when outcomes are met or not met** - Has consequences that matter to organizations and individuals involved in and responsible for CTE. | 17, 18, 73, 92, 93, 97, 101 |
| **Base on shared mission, vision, goals, and values** - Derives from commonly shared and agreed upon in advance mission, vision, values, goals, and responsibilities involving local, state, and federal perspectives and reflects continuous quality improvement in changing environments; has buy-in from students, staff, and other stakeholders; and leads to leveraging of energy, support, and resources. | 5, 12, 18, 73, 86, 93, 97, 98 |
| **Reflect attention to areas of advocated reform in career and technical education** - Includes integration (alignment) of academic and CTE, articulation of secondary and postsecondary levels, coordinating work- and school-based learning, career pathways, improved achievement, obtaining certificates, degrees and credentials; work placement, work advancement. | 1, 15, 42, 43, 44, 45, 46, 47, 48, 73, 93, 94, 95, 96, 101 |
| **Adapt accountability to changing environments** - Provides for changing accountability requirements with changes in social, economic, and political context; takes long-term perspective; and sometimes is willing to go slowly to reach long-term goals with accountability. | 17, 18, 73, 93 |
| **Align with funding levels, shares, allocation strategies, incentives** - Links the flow of resources to accountability in ways that connect and contrast costs and benefits and reinforces improving CTE; closely monitors progress toward expectations; and coordinates accountability requirements among institutional processes and funding sources; aligns structural architecture with accountability provisions. | 1, 17, 18, 73, 78, 93, 97, 98 101 |
| **Address student, community, state, and national needs** - Responds to combined needs of students, community, the state, and national interests through providing and supporting multiple extents of participation and ways to benefit from CTE. | 12, 73, 92, 93, 95, 96, 101 |
| **Include principles of continuous quality improvement** - Uses the processes and techniques of continuous quality improvement/total quality management. | 73, 86, 93, 95, 97, 98, 101 |

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| **Have a clear purpose** - Includes purpose of program improvement and financial auditing, but they are explicit beforehand and based upon the end result; provides overall plan for accountability where component parts fit into a whole plan. | 15, 17, 18, 86, 92, 93, 94, 101 |
| **Develop realistic outcomes and indicators jointly** - Follows from coordinated effort by local, state, federal educational agencies, and other partners to be clear and realistic in terms of measures, processes, and timelines; leads to alliances; and is not-self serving. | 15, 18, 92, 93, 94, 95, 97, 98, 101 |
| **Recognize and provide for the costs of accountability** - Involves consideration of the costs of collecting, analyzing, and reporting accountability information at all levels and shares total resources reasonably used for these purposes; insures that information collected is necessary and used; builds on existing reporting systems; and provides for training of staff on necessary processes and measures. | 18, 73, 78 |
| **Provide for and support multiple extents of participation and ways to benefit from career and technical education** - Includes wide variations in length and focus of study, exploration as well as specialization, short- as well as long-term effects, and individuals as well as organizational and community impacts at both secondary and postsecondary levels. | 1, 73, 93, 94, 95, 96, 101 |
| **Acknowledge limitations in assessment processes and measures** - Results from clear understanding of the shortcomings of evaluation strategies and indicators and efforts to insure that assessment information is not misused; and uses both quantitative and qualitative measures and information. | 93, 94, 97, 98, 101 |
| **Respect distinctiveness of each institution** - Responds to the unique characteristics and external situation faced by each educational institution. | 18, 93, 94, 97, 98, 101 |

## Table 12.

## Recommended Design Features of Learning Celebration for Career and Technical Education

| Recommended Design Features | Related Reviews |
|---|---|
| **Align with features of other design elements** - Assures that the design features of learning celebrations are consistent with and supportive of the design features recommended for other design elements. | |
| **Express and build commitment to and ownership of mission, vision, values, and signature of CTE** - Links in meaningful way to mission, vision, values, and signature of the learning experience; builds sense of community; strengthens ownership in the program by students, staff, and other stakeholders through recognition of value added and high standards; and identifies and deals with barriers. | 99 |
| **Have genuine value in commemorating meaningful accomplishments** -Are significant to those being recognized and enjoyable to all those participating; are meaningful and sincere events that contribute to the learning experience. | 99 |

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| **Emanates from, as well as creates, learning cultures** - Recognizes continuous growth and renewal in various ways in the educational enterprise - from old and new learning cultures and from within and outside of educational institutions; rooted in CTE culture, as well as helping to advance culture and thereby connecting past, present, and future. | 76, 99 |
| **Conduct at multiple times and ways during a program** - Happens at the beginning, at milestones along the way, at end of CTE and in a wide variety of ways, from simple applause and display to major public events; pays attention to timing and need for continuous encouragement; uses impromptu events and seeks missed opportunities for recognition; makes efforts to include locating some celebrations in the wider community; and uses media to expand and strengthen celebrations. | 99 |
| **Include all contributors to the learning experience** - Includes regular systems of recognizing learners, staff, partners, and community as individuals and groups; and makes special effort to invite others, both internal and external, to the organization. | 99 |
| **Recognize external standards and benchmarks** - Base on expectations drawn from outside the educational institution. | 99 |
| **Include constant display of learning projects and products** - Gives attention to the involvement in projects and their tangible results such as achieving outcomes and mastery of competencies. | 85, 99 |
| **Provide continuous motivation and incentives for all learners and staff** - Encourage and supports improved learning and performance. | 99 |
| **Have enough variety so everyone is included at some time** - Provides positive encouragement and reaches to all learners and are conducted in multiple ways and times. | 99 |

**Table 13.**
**Recommended Design Features of Learning Finance for Career and Technical Education**

| **Recommended Design Features** | Related Reviews |
|---|---|
| **Align with features of other design elements** - Assures that the design features of learning finance are consistent with and supportive of the design features recommended for other design elements. | |
| **Link funding directly and closely to accountability and consequences** - Shows return on investment; aligns programs with actual work, family, and community needs in ways that are sustainable; uses continuous program review and prunes lower productive programs; uses cost/benefit and unique need information in making program decisions; establishes clear expectations; and links risk, responsibility, performance, and rewards everywhere. | 1, 18, 73, 100 |
| **Be innovative** - Encourages thinking "outside of the box" as relates to finances (i.e., relations between labor and management, full-time and part-time staffing); encourages entrepreneurship; supports re-engineering; and encourages flexibility, process documentation, and courage to experiment with and redesign institutional processes. | 73 |

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| **Focus on priorities** - Constantly pays attention to educational priorities, makes distinctions between high and low importance and what should stay and what should change or go, identifies necessities, and reserves resources "off the top" for new high-priority initiatives before budgeting other matters. | 18, 73, 100, 101, 103 |
| **Use sound fiscal policies and management and reports to all stakeholders** - Identifies areas of efficiency and inefficiency; constantly examines how "you are doing business;" analyzes cost to the customer in terms of value and market, and price accordingly; and employs information technology to improve financial practices. | 18, 73, 100, 101 |
| **Utilize systems thinking when seeking resources from partnerships** -Creates a systems-thinking approach to seek and integrate innovative resources from diverse sources; and builds solid cooperative relations with partners (i.e., other educational institutions, business and industry, social service agencies, government) where there are mutual gains and costs that can be shared or shifted; and constantly is on the lookout for new partners. | 73, 86, 87, 100 |
| **Do long term thinking and financial planning** - Examines long-term costs and benefits with learner and community needs in mind, thinks in terms of investment strategies regarding both costs and benefits, and projects budgets and contingency plans three to five years into the future. | 10 |
| **Focus on role of CTE in the system of workforce and economic development** - Builds and uses a systems approach in considering how CTE can complement other components of the workforce and economic development "system" (i.e., considers relations to welfare to work, industry retraining programs, Tech Prep, School to Work) and identifies specific roles, contributions, benefits, and funding streams. | 1, 18, 67, 69, 73, 101 |
| **Aggressively seek resources from diverse sources** - Develops funds through effective marketing, student retention, grants and contracts, foundations, sales of products and services, leasing versus buying, joint ownership, partnerships, and importing versus owning programs. | 100 |
| **Promote efficiency in learning** - Allocates resources based on value added, eliminates waste in funding use, and constantly looks for cost savings involving input from students and staff and other stakeholders. | 1, 18, 73, 100, 101 |
| **Encourage schools/colleges to specialize** - Fosters program and service specialization among schools/colleges (i.e., centers of excellence, regional centers) to take advantage of economies of scale in terms of enrollments and operating costs such as facilities and equipment. | |
| **Integrate local, state, national, and international planning and resources** - Brings together multiple sources of funds and enhances flexibility in use of resources. | 1, 73, 100, 101 |
| **Do purchasing in consortiums with other schools, colleges, and other entities** - Develops educational institution-wide budgets (rather than only program-specific) and supports purchasing in cooperation with others. | 103 |
| **Develop a foundation fund development strategy** - Develops a foundation for gifts and donations as an additional source of funding. | |
| **Encourage schools/colleges to seek and promote internal and external cooperation** - Insists that programs and services within and among schools and colleges share facilities, equipment, supplies, and staffing. | 103 |

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| **Provide financial information to stakeholders** - Insures that all stakeholders understand funding needs and uses, analyzes services from the perspectives of various stakeholders, builds political base and commitment to funding needs, publicizes/promotes/celebrates successful finance and accountability. | 1, 100, 101 |
| **Sell services external to the school/college** - Involves the students and staff in producing products, resources, and services that can be sold for a profit outside the educational institution. | 102, 103 |
| **Outsource/privatize services where appropriate and where resources can be saved for higher priority uses** - Uses outsourcing possibilities as opposed to providing services from existing budgets when long-terms cost and benefits suggest this as an appropriate strategy. | 102, 103 |

## Closing

The *Compendium of Design Reviews of Related Research, Policies, and Exemplary Practices* provides a selected review of research, policies, and exemplary practices related to the project, *New Designs for Career and Technical Education at the Secondary and Postsecondary Levels.* The compendium is to be used in conjunction with the other product of the project, the *Design Guide for Practice and Policy.* Together the two products are intended to assist in developing more effective and efficient designs for career and technical education for youth and adults well into the 21st century. The major contributions made by the Compendium are: (a) to show the extent of support of the recommended design features by related research, and (b) to provide additional information pertaining to the recommended design features that may be of use in improving professional practice and policy.

The syntheses and references are formatted for brief overview and subsequent use in a local context. To aid those using the Compendium to become more knowledgeable of current research and practice related to a design feature, each review has its own reference list. To further assist the user, the reviews are organized in sections by each of the twelve design elements with an annotated bibliography of additional sources at the end of each section.

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Minnesota State Colleges and Universities
St. Paul, MN

**Joe May**, President
Pueblo Community College
Pueblo, CO

**James McCully**, Coordinator, Curriculum and Research Services
Mississippi University
Starkville, MS

**Pat McGuire**, Vice President
Aims Community College
Greeley, CO

**Charles Novak**, President
Richland Community College
Decatur, IL

**Dan Petersen**, Director of Research
State Division of Professional and Technical Education
Boise, ID

**Russel Poulin**, Associate Director
Western Cooperative Education Telecommunication
Boulder, CO

**Cam Preus-Braly**, Commissioner
Department of Community Colleges and WFD
Salem, OR

**Raul Ramirez**, Campus Executive Director
Dona Ana Community College
Las Cruces, NM

**Tina Royer**, Director of Planning and Research
Central Lakes Community College
Brainerd, MN

**Michael Summers**, Vice President of Education
Greenville Technical College
Greenville, SC

**Barb Vredeveld**, Dean
Iowa Western Community College
Council Bluffs, IA

**Jan Yoshiwara**, Division Director of Education Services
Washington State Board of Community and Technical
Olympia, WA

## Design Studio 2, November 28-30, 2000, San Antonio, Texas

**Jeannette Armstrong**, Director of Career and Technical Education
Davidson County Schools
Nashville, TN

**Ralph Beacham**, Director of Career and Technical Education
Southeast Kansas Education Services Center
Olathe, KS

**Richard Blais**, Executive Director
Project Lead the Way
Clifton Park, NY

**Art Bogardus**, Career and Technical Education Coordinator
Brighton School District 27J
Brighton, CO

**Rick Bogart**, Chief Executive Officer
Capistrano-Laguna Beach ROP
San Juan Capistrano, CA

**Charlene Bonham**, Manager Offices of CTE
Baltimore County Public Schools
Towson, MD

**William Darling**, Principal
Queen Anne's County High School
Centreville, MD

**Michael Fitzpatrick**, Superintendent/Director
Blackstone Valley Voc. Reg. School District
Upton, MA

**Kathy Gifford**, Secondary Teacher
Kearney High School
Kearney, NE

**Wendell Greer Jr.**, Principal
Manual Arts High School
Lafayette Square, CA

**Roxanna Johnson**, Culinary Arts Instructor
Mt. View High School
Tucson, AZ

**Wayne Johnson**
Linn Benton Educational Services District
Albany, OR

**Bonnie Longnion**, Assoc. Vice Chancellor for Educational Program Services
Board member of Humble School District
North Harris Montgomery Community College District
Houston, TX

**Sharon Mastroiani**
EHOVE Career Center
Milan, OH

**John McGuire**, Education Specialist, Technology Education
Alabama State Department of Education, Office of CTE
Montgomery, AL

**Shannon Milum**, Director of Career Technology
Los Fresnos High School
Los Fresnos, TX

**Gayle Morrow**, Technical Education Coordinator/Counselor
Montgomery County Board of Education
Montgomery, AL

**Steve Mumma**, School-to-Career Coordinator
Wayzata Public Schools
Plymouth, MN

**Ron Munkres**, Director of Vocational Education
Sumner Public Schools
Sumner, WA

**Peter Rickard**, Principal
Tri-County Reg. Voc. Technical High School
Franklin, MA

**Robert Runkle**, Director
Berks Career and Technology Center
Leesport, PA

**Andy Simpson**, Architect and Planning Consultant
Pfluger Associates, P.L.L.C.
San Antonio, TX

**Kenneth Smith**
Department of Public Instruction
Raleigh, NC

**Lemar Snyder**, Director
Bucks Co. Technical High School
Fairless Hills, PA

**Joan Wilkosz**, Administrator for CTE & School-to-Work Transition
Minneapolis Public Schools
Minneapolis, MN

**Guests**

**Charles Hopkins**, Director
University of Minnesota
National Research Center for Career & Technical Education
St. Paul, MN

**Laura Messenger**, Education Program Specialist
U.S. Department of Education
Washington, DC

**Design Studio 3, October 17-19, 2001, Ft. Lauderdale, Florida**

**Christal Albrecht**, Associate Dean for College Planning
Cy-Fair College
Houston, TX

**Linda Austin**, Associate Dean and Center Director
Cy-Fair College
Houston, TX

**Dan Bodette**, Principal
School of Environmental Studies
Apple Valley, MN

**Sue Boehland**, Director of Vocational Education
Freshwater Education District
Staples, MN

**Earl Campa**, Vice President of Student Development
Montgomery College
Conroe, TX

**Luis F. de la Garza, Jr.**, Executive Director
South Texas Tech Prep.
Laredo, TX

**Jim Everett**, Director of Technical Education
Metropolitan Community Colleges
Kansas City, MO

**Ann Gaulin**, Consultant Connecticut State Department of Education
Bureau of Career and Adult Education
Middletown, CT

**Debbie Goodall**, Director, Career Education Consortium
The Metropolitan Community Colleges
Kansas City, MO

**Homer M. Hayes,** President
College of the Mainland
Texas City, TX

**Marilyn Kucera**, Associate
New York State Department of Education
Albany, NY

**Lanny D. Larson**, Deputy Exec. Director, Workforce Development
Florida Dept. of Education, Div. of Community Colleges
Tallahassee, FL

**Deborah Nelson**, Associate Superintendent, Secondary Instruction
Hickman Mills School District
Kansas City, MO

**Paul Osborn**, Associate Director of Academic Affairs
Kansas Board of Regents
Topeka, KS

**Eugenia Proulx**, President
The Community College of Baltimore County, Dundalk Campus
Baltimore, MD

**Jane Pruitt**, Local Director of CTE and Principal
Worcester CTE Center
Newark, MD

**Rose Raynak**, Program Director
Division of Workforce Development
Tallahassee, FL

**Anita Sherman**, Director of Career and Technical Education
Montgomery Public Schools
Montgomery, AL

**Terri Simmons**, Special Projects Director
Lenawee Intermediate School District
Adrian, MI

**Nanette Smith**, Director of Educational Planning
Virginia Community College System
Richmond, BA

**Theresa Stafford**, Local Director of CTE and Principal
Caroline County Career Center
Ridgely, MD

**Michael Stoll**, Dean of Math, Science and Career Education
Genesee Community College
Batavia, NY

**Pat Swarthout**, Regional STW Coordinator
Central Lakes
Brainerd, MN

**Glenn Thomas**, Director
Florida High School at FSU
Tallahassee, FL

**Diane Troyer**, President
Cy-Fair College
Houston, TX

**Ted Vernon**, Principal, Grandview High School
Grandview School District
Grandview, MO

**Linda Washburn**, Assistant Superintendent
Center School District
Kansas City, MO

**Jeffery White**, Director, Leadership and Assessment
Independence School District
Independence, MO

**Bob Williams**, Vice President of Administrative Services
Cy-Fair College
Houston, TX

**LeBaron Woodyard**, Dean, Instructional Resources & Technology
California CC's Chancellor's Office
Sacramento, CA

## Design Studio 4, November 7-9, 2001, San Diego, California

**Linda Anderson**, Director of Career and Technical Education
Birdville ISD
Haltom City, TX

**Ralph Beacham**, Director
Career and Technical Education
Olath, KS

**Douglas Benoit**, Division Dean Technical Education
Clover Park Technical College
Auburn, WA

**Frank Coulter**, Superintendent
Moore Norman Technology Center
Norman, OK

**Lyla Eddington**, Dean, Educational Program Development
Rio Hondo College
Whittier, CA

**Kimberly Green**, Executive Director
National Association of State Directors of CTE
Washington, DC

**Ben Hix**, Principal
Thompson Valley High School
Loveland, CO

**Bill Jackson**, Assistant Superintendent Business and Industry Services
High Plains Technology Center
Woodward, OK

**Ron Jantzi**, Director Trades and Technology
Chemeketa Community College
Salem, OR

**Lisa Larson**, Associate Dean
Hennepin Tech
Eden Prairie, MN

**Ranaye Marsh**, Dean
Idaho State University College of Technology
Pocatello, ID

**Joseph Mattoon**, Instructional Design Manager
MATEC
Tempe, AZ

**Virginia McMillan**, Executive Vice President
Illinois Community College Board
Springfield, IL 62701

**Darlene Miller**, Dean of Prof./Tech. Programs and Workforce Dev.
Green River Community College
Lakewood, WA

**Joseph Miller**, Tech Prep/STW Coordinator
Bainbridge College
Bainbridge, GA

**Jerrilee Mosier**, Vice President of Workforce Development and Training
Edmonds CC
Lynnwood, WA

**Steve Mumma**, School-to-Career Coordinator
Wayzata Public Schools
Plymouth, MN

**Ron Munkers**, Director of Applied Science
Sumner School District
Sumner, WA

**Sarah H. Mussett**, Manager, Organization and System Development
Oklahoma Department of Career and Technology Education
Stillwater, OK

**Stella Perez**, Director, League Online
League for Innovation in the Community College
Chandler, AZ

**Dennis Piper**, DST Lead Instructor
Umpqua CC
Roseburg, OR

**Tina Royer**, Director of Planning
Central Lakes College
Brainerd, MN

**Jim Schmidt**, Professional Technical Supervisor/Principal
Dr. Dehryl A. Dennis Professional-Technical Education Center
Boise, ID

**Jessica Stumpf**, Associate Dean
Hennepin Tech
Brooklyn Park, MN

**William Westphal**, Principal
Canby High School
Canby, OR

## Appendix IV. Site Visit Locations and Presentations on Exemplary Practices

### Site Visitations

UAW Ford-MNSCU Training Center
Minneapolis/St. Paul, MN

Lake Street Council-Goodwill/Easter Seals-Phillips Job Bank
Minneapolis/St. Paul, MN

Science Museum of Minnesota
Minneapolis/St. Paul, MN

Guilford Technical Community College
Jamestown, NC

Piedmont Triad Center for Advanced Manufacturing
Greensboro, NC

Weaver Education Center
Greensboro, NC

Higher Education Advanced Technology Center
Denver, CO

Sandra Day O'Conner High School
San Antonio, TX

Bellevue Community College
Bellevue, WA

Northwest Center for Emerging Technologies
Bellevue Community College
Bellevue, WA

Manual Arts High School
Los Angeles, CA

Broward Community College
Fort Lauderdale, FL

The Gary and Jerri-Ann Jacobs High Tech High
San Diego, CA

## Presentations

**Tamra Busch-Johnson**, Executive Director
Business Education Compact
Hillsboro, OR

**Mark Bello**, City Planner
Portland, OR

**Paul Cole**, Secretary Treasurer
New York State AFL-CIO and
Vice Chair of the National Skills Standards Board

**Richard Newman** and **Michael Lesiecki**
Maricopa Advanced Technology Education Center
Tempe, AZ

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Accrediting Commission for Senior Colleges and Universities: Western Association of Schools and Colleges. http://www.wascweb.org/senior/wascsr.html

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Commission on Colleges: Southern Association of Schools and Colleges. http://sacscoc.org

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